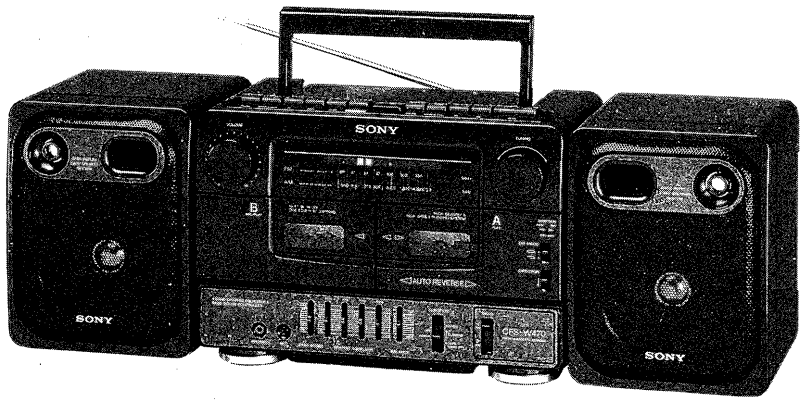
CFS-W470

SERVICE MANUAL

US Model
AEP Model

Ver 1.1 2002.09



Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MF-W470

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 3.2-ohm loads, both channels driven, from 150-10,000 Hz; rated 1.8 W per channel minimum RMS power, with no more than 10% total harmonic distortion in AC operation. (US model)

Frequency range	US model : FM : 87.6 – 108 MHz AM : 530 – 1,710 kHz AEP model : FM : 87.6 – 107 MHz AM : 531 – 1,602 kHz
Antennas	FM :Telescopic antenna AM : Built-in ferrite bar antenna
Recording system	4-track 2-channel stereo
Frequency response	80 – 8,000 Hz
Speakers	Tow way Approx. 10 cm (4 inches) dia. woofer × 2 Approx. 2 cm (13/16 inch) dia. tweeter × 2
Power output	5 W (2.5W+2.5W) (AEP model)
Input	External microphone input jack (minijack) Sensitivity 0.775mV for low impedance microphone
Outputs	Headphones jack (stereo minijack) for 8 – 300 ohms impedance headphones
Power requirements	US model : 120 V AC, 60 Hz AEP model : 220 – 230V AC, 50 Hz 9V DC, six size D (R20) batteries.
Power consumption	14W
Battery life	

Batteries	FM recording
Sony SUM-1 (NS)	Approx. 18 hours
Sony AM 1 (N) alkaline	Approx. 30 hours

Dimensions	Approx. 580 × 201 × 184 mm (w/h/d) (22 7/8 × 8 3/8 × 7 1/4 inches)
	Approx. 5.0 kg (10 lb 6 oz) incl. batteries
Accessory supplied	AC power cord (1)

Design and specifications subject to change without notice.

RADIO CASSETTE-CORDER

9-957-529-12
2002I0200-1
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Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

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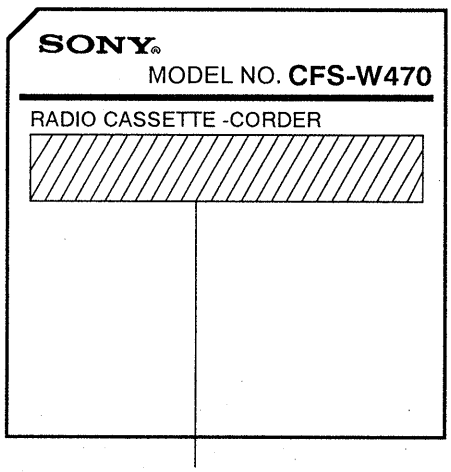
MODEL IDENTIFICATION

– Model Number Label –



US model : AC 120V~60Hz
AEP model : AC 220-230V~50Hz

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

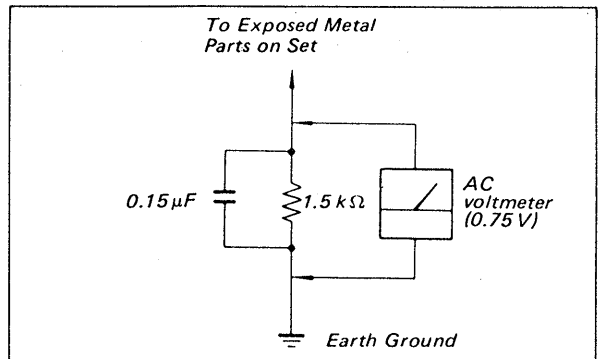


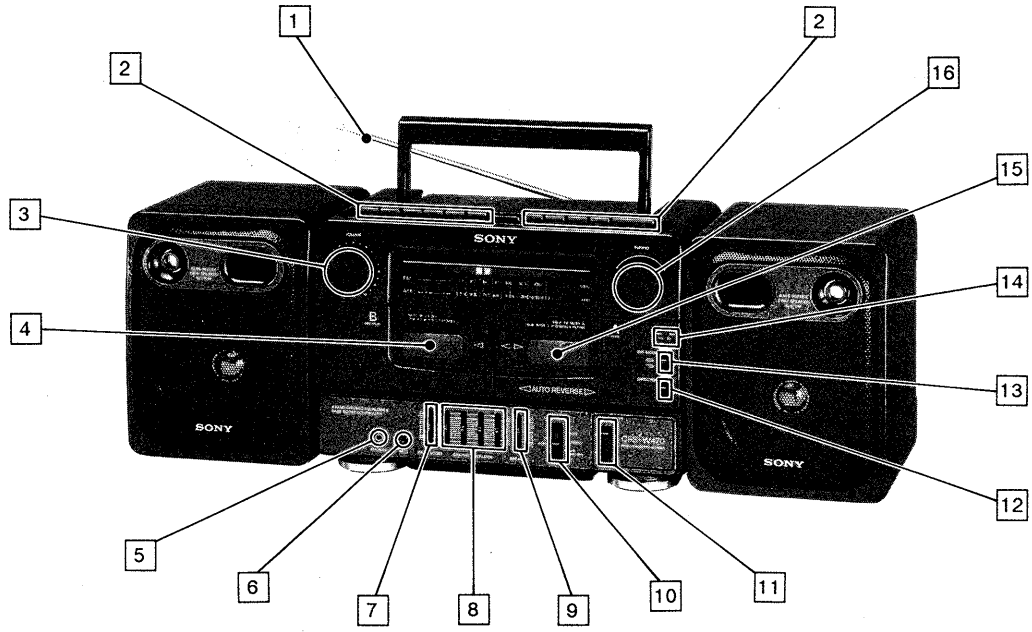
Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

LOCATION AND FUNCTION OF CONTROLS



[FRONT panel]

1 Telescopic antenna

2 Tape operation buttons
- ● REC (record) button : (deck B only)
- ◁ PLAY (play back) button
- ▷▷ REW (rewind) button
- ◁◁ FF (farst-forward) button
- □/⏏ STOP/EJECT button
- ▯▯ PAUSE button

3 VOLUME knob

4 Cassette holder B

5 PHONES (headphones) jack (stereo minijack)

6 MIC jack (monaural minijack)

7 BASS BOOST control

8 4-BAND GRAPHIC EQUALIZER controls

9 BALANCE knob

10 FUNCTION selector

11 BAND selector

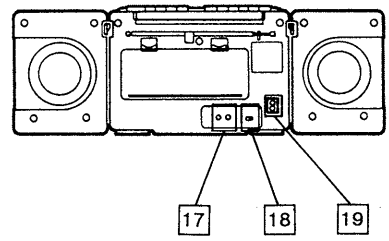
12 DIRECTION button

13 DIR MODE selector

14 DIRECTION (FWD/REV), OPR/BATT indicator

15 Cassette holder A

16 TUNING knob



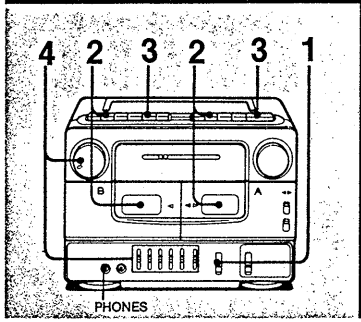
[REAR panel]

17 SPEAKER (L, R) jack (monaural minijack)

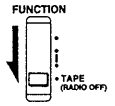
18 ISS (interference supperess switch) / FM MODE selector

19 AC IN ~

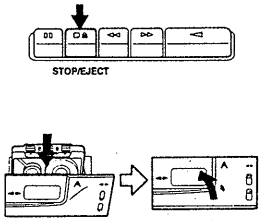
Playing a Tape (either deck)



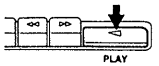
1 Set to TAPE (RADIO OFF).



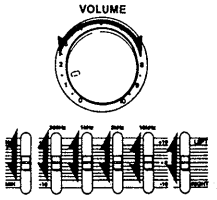
2 Insert a cassette.



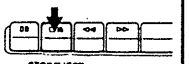
3 Press ◄ PLAY.



4 Adjust VOLUME, BALANCE, GRAPHIC EQUALIZER and BASS BOOST, if necessary.



To stop play



Tape operation buttons

If you want to	Press
play	◄
wind tape rapidly in ◄ direction	◄◄
wind tape rapidly in ► direction	►►
stop play/recording	■ ▲
pause for a moment	II
resume play/recording after a pause	II
remove a cassette	■ ▲ (twice)

Note (Deck A only)
Be sure to press ■ ▲ to release ◄◄ or ►► at the tape end.

For private listening
Connect stereo headphones to PHONES jack.

Notes
- During playback, avoid pressing the ◄/◄◄/►► buttons of the other deck since the playback speed may vary.
- When both decks A and B are in the playback mode, only playback from deck B will be audible.

When the unit is in use
DIRECTION indicator/OPR/BATT (operation/battery) indicator lights up.
FWD: Lights except when the unit plays the reverse side on deck A.
REV: Lights while playing the reverse side on deck A.
Intensity of glow shows battery level.

To select plaback mode (Deck A only)
Set the DIR MODE (direction mode) selector to the desired position.
⮌ To play both sides of a cassette once, starting from the front side to the reverse side.
⮌⮌ To play both sides of a cassette repeatedly.

On the side of the tape to be played (Deck A only)
After you press ◄, the unit will play the front (FWD lights) and then reverse (REV lights) side of tape continuously. Slide DIRECTION switch to ↕ to change the side of the cassette.

Playing tapes in both decks successively
1 Insert cassettes in both decks.
2 Depress ◄ on deck B.
Playback on deck B starts.
3 Depress ◄ and II on deck A simultaneously.
◄ on deck B and II on deck A are released at the tape end on deck B, and playback on deck A starts automatically.

Adjusting Sound

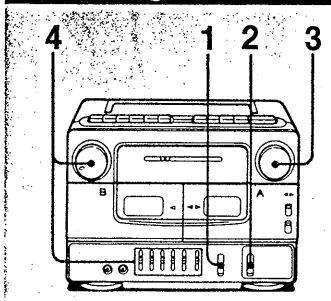
To obtain powerful bass sound
Slide the BASS BOOST control toward MAX.

To equalize the reproduced sound
Slide each GRAPHIC EQUALIZER control toward +10 or −10.

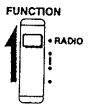
Frequency coverage of each equalizer control
300 Hz: Speaking voice, middle frequencies of instrumental music.
1 kHz: Provides more presence of vocals.
3 kHz Overall brightness of sound.
10 kHz: Effects the general treble. Slide toward −10 to reduce high frequency noise.

To adjust stereo imaging
Use the BALANCE control, especially when speakers are not symmetrically placed.

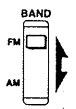
Listening to the Radio



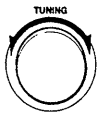
1 Set to RADIO.



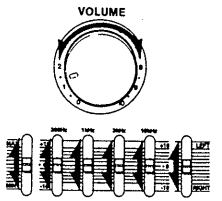
2 Select the desired band.



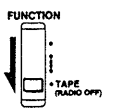
3 Tune in a desired station.



4 Adjust VOLUME, BALANCE, GRAPHIC EQUALIZER and BASS BOOST, if necessary.



To turn off the radio

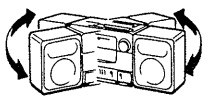


For better reception of a weak FM stereo program
Set the ISS/FM MODE switch on the rear panel to MONO. The noise will be reduced, however, the sound becomes monaural.

Antenna adjustment

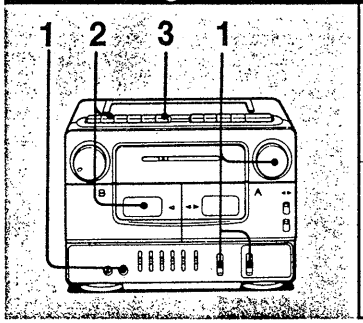
FM

AM

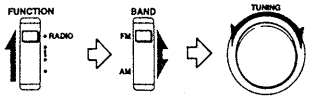


This section is extracted from instruction manual.

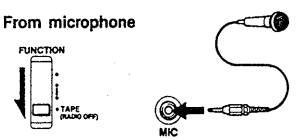
Recording (deck B only)



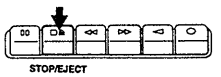
1 From radio



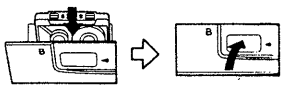
1 From microphone



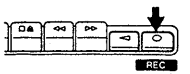
2 Insert a cassette.



Use TYPE I (normal) tape.

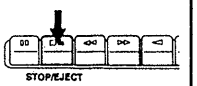


3 Press ● REC.



◄ is pressed automatically.

To stop recording



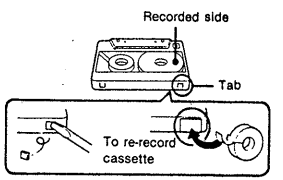
When the tape reaches the end, ●REC is released automatically.

Notes on recording

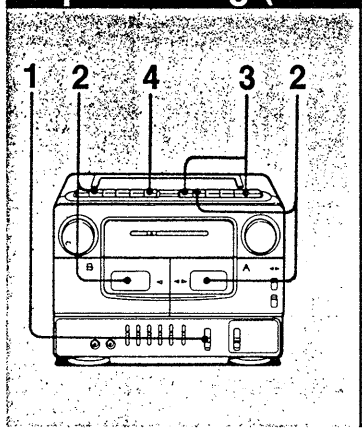
- While recording, avoid pressing the ◄/◄◄/►► buttons on deck A to assure stable recording.
- If a whistling noise is heard during AM recording, which was inaudible before the record button is depressed, set ISS/FM MODE on the rear panel to 1, 2, or 3, depending on which one best reduces the noise.
- While recording from the built-in radio, you can listen to the program through speakers or headphones. While recording with the microphone, the sound being recorded can not be monitored through headphones.
- No volume adjustment is necessary. Recording level is automatically set. Volume adjustments will not affect recording level. Any setting of the GRAPHIC EQUALIZER control or the BASS BOOST control does not affect recording level.

To prevent accidental erasure

Break off the tab corresponding to the side which has been recorded.
Recording on that side will be protected.

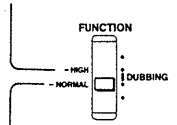


Tape Dubbing (deck A to deck B)



1 Select dubbing speed.

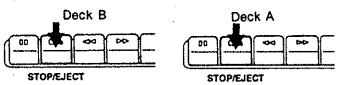
To dub at high speed



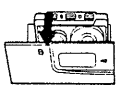
To dub at normal speed

2 Insert cassettes.

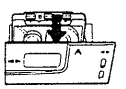
Use TYPE I (normal) tape on deck B.



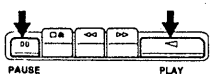
Blank cassette



Source cassette

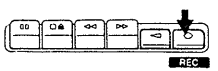


3 on deck A



Depress ◄. Depress ❚❚ at the point you want to start dubbing.

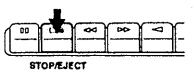
4 on deck B



Press ●.
Tapes in deck A and deck B start simultaneously. This means tape dubbing starts (Synchro dubbing).

To stop dubbing

on deck A and deck B



After dubbing, set FUNCTION to TAPE (RADIO OFF).

Notes on dubbing

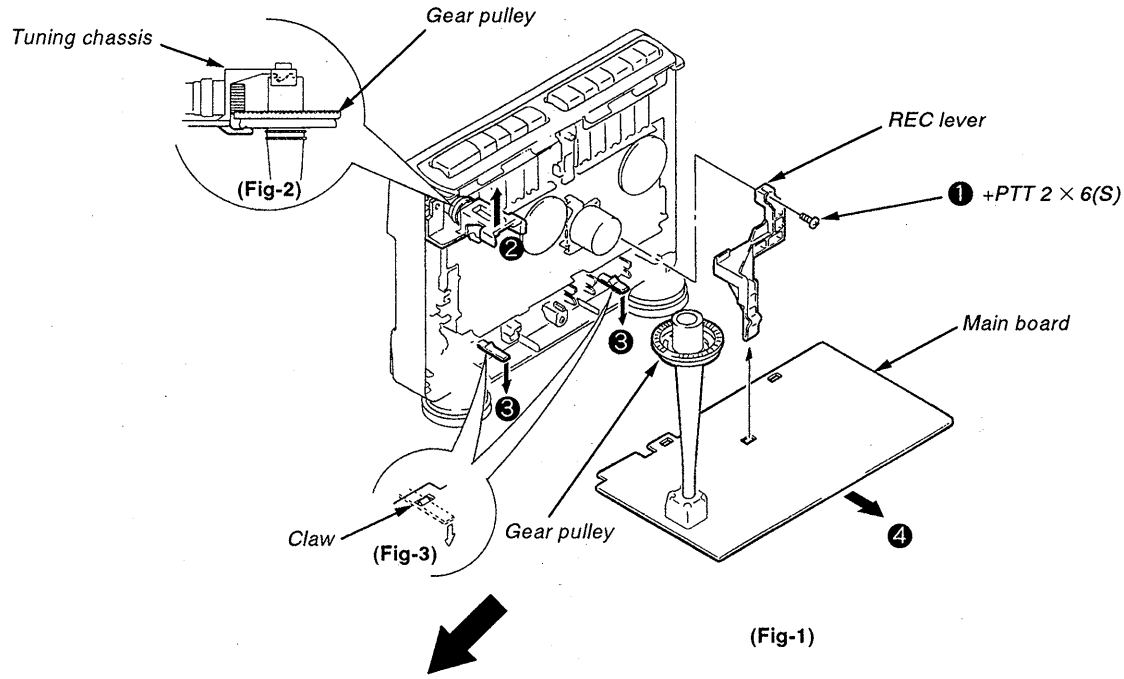
- If deck A's tape finished first, deck B will continue playing. (Press ■▲ to release locked buttons).
- If deck B's tape finishes first, deck A will continue playing.
- During dubbing, decks A and B are automatically shut off at their tape ends, except in the following case for the CFS-W470: Deck A will not be shut off at the end of the front side.
- Do not change the dubbing speed during dubbing, as this causes excessive wow and flutter.

SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

2-1. MAIN BOARD

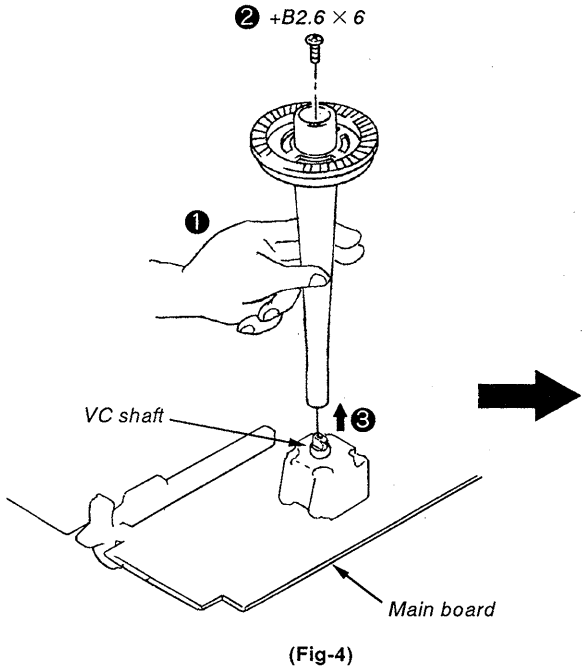
- Pull the tuning chassis up in direction of the arrow to remove the claw. (Fig-2)
- Press the claw down so that the claw will be removed from the main board. (Fig-3)



(Fig-1)

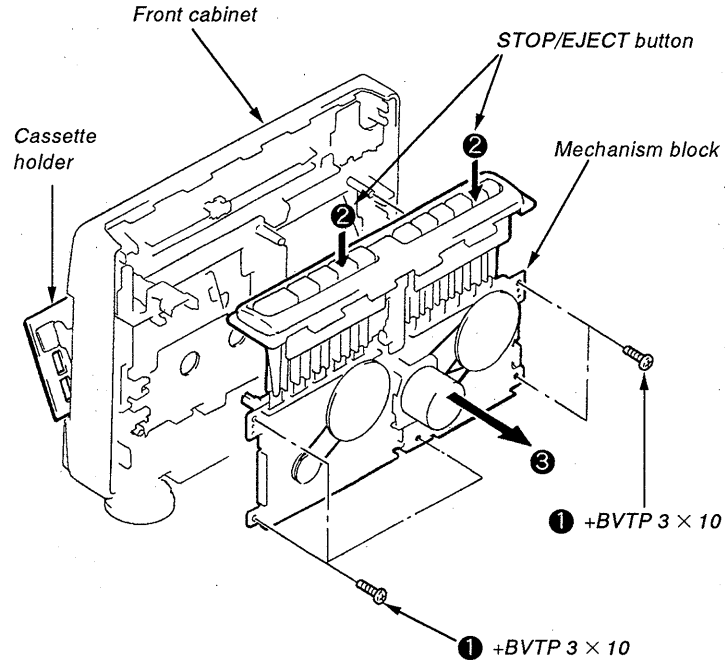
2-2. GEAR PULLEY

- Remove the screw while firmly holding the gear pulley so that it do not damage the VC shaft. (Fig-4)

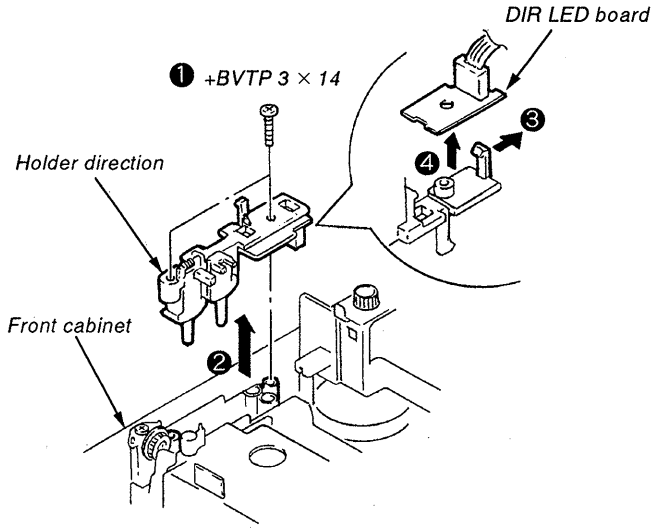


(Fig-4)

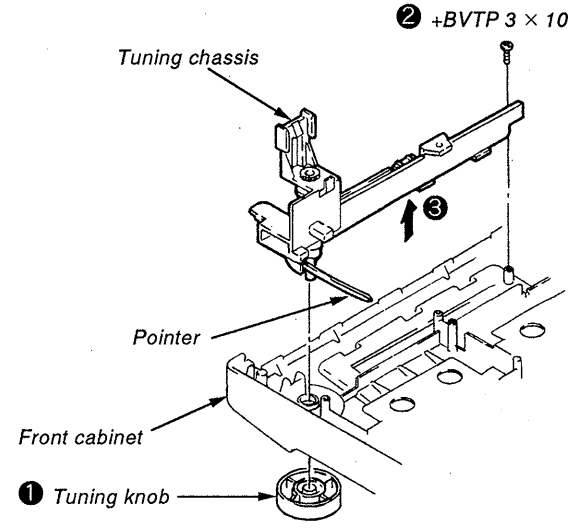
2-3. MECHANISM BLOCK



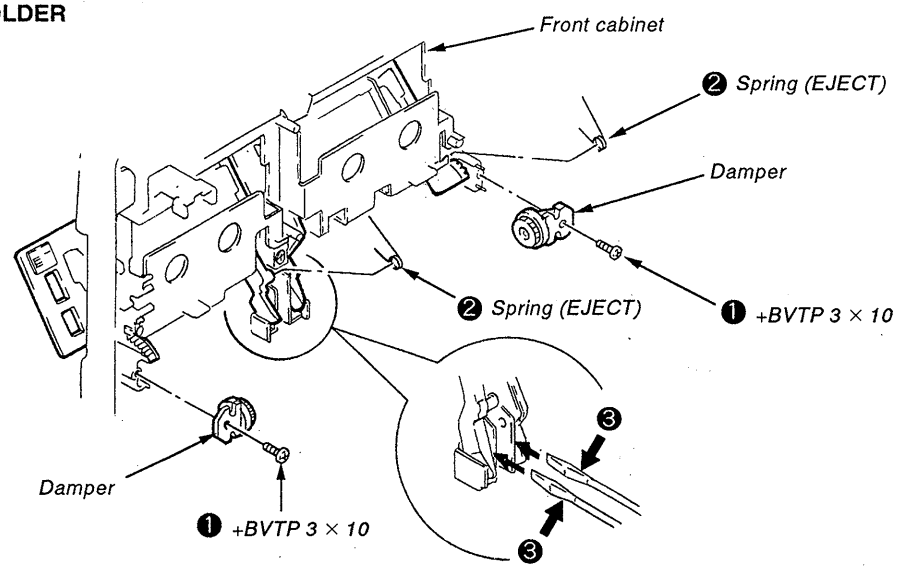
2-4. DIR LED BOARD

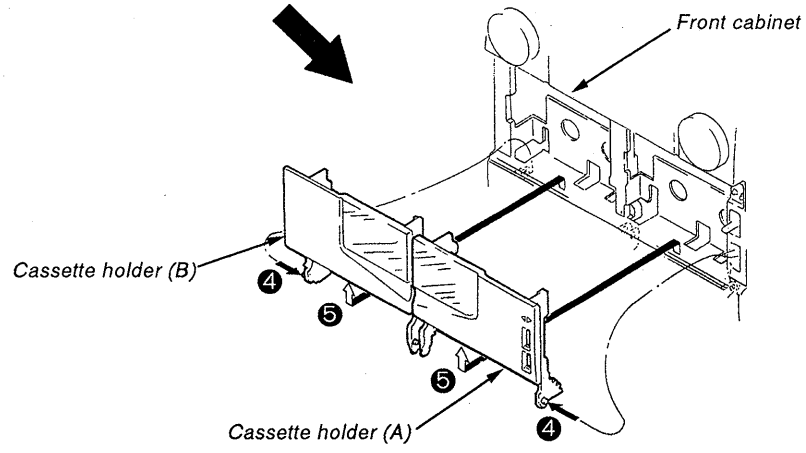


2-5. TUNING CHASSIS



2-6. CASSETTE HOLDER

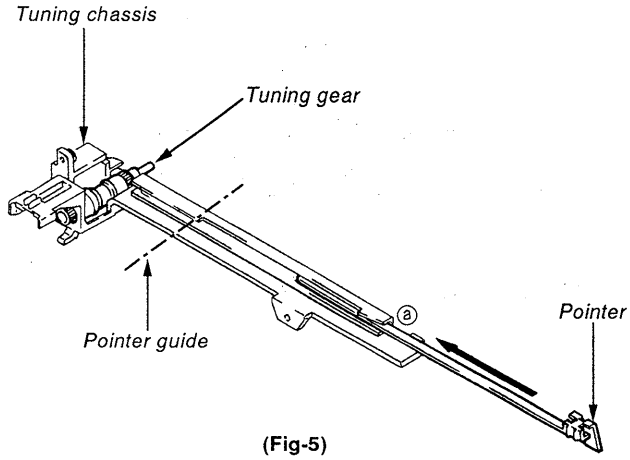




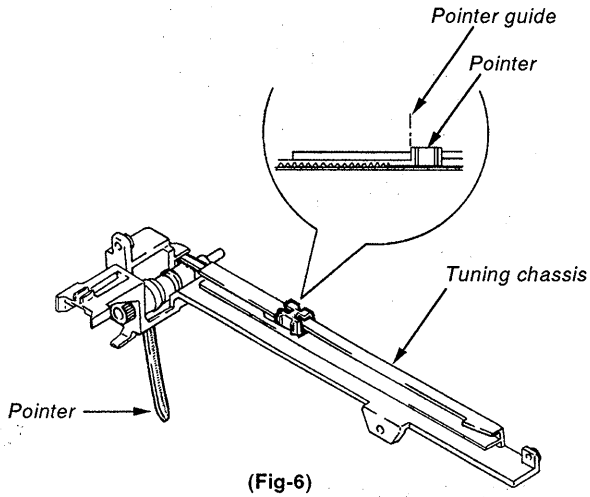
SECTION 3
DIAL POINTER INSTALLATION

Note : Follow the installation procedure in the numerical order given.

- Insert the pointer into the tuning chassis by sliding it from the direction ⓐ. (Fig-5)
- Slide the pointer to align it with the pointer guide. (Fig-6)

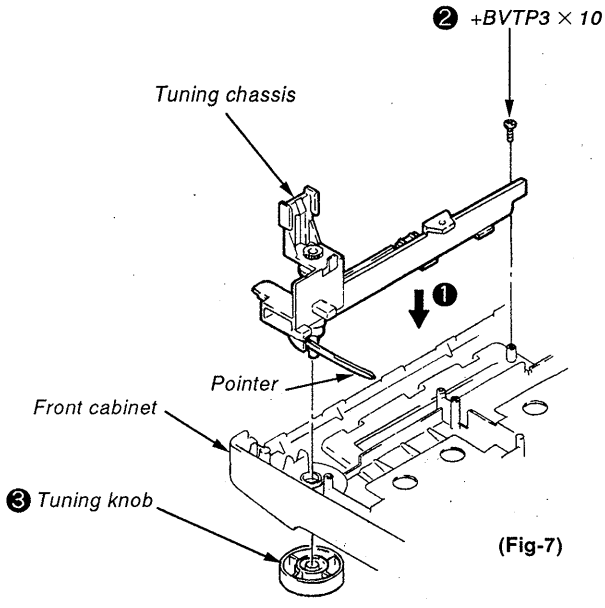


(Fig-5)

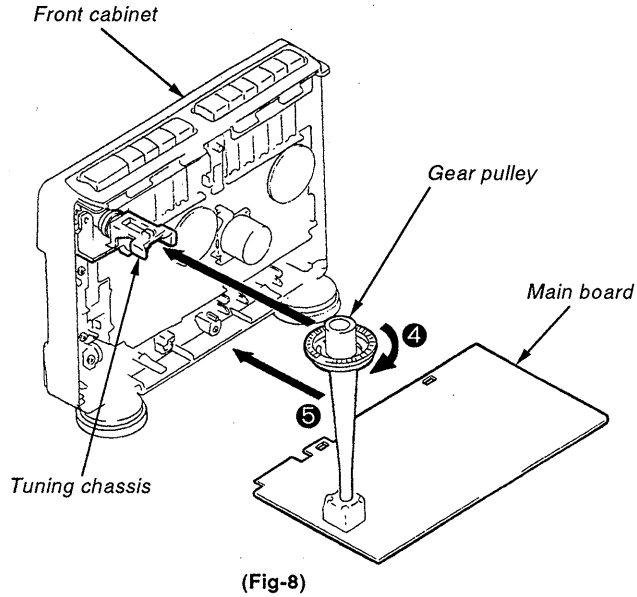


(Fig-6)

- Fully turn the gear pulley in the clockwise direction. (Fig-8)



(Fig-7)



(Fig-8)

SECTION 4
ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :
   record/playback head　　pinch roller
   erase head　　rubber belts
   capstan　　idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

1. Torque Measurement

DECK A

Mode	Torque Meter	Meter Reading
FWD Playback	CQ-102C	30 – 75g•cm (0.42 – 1.04 oz•inch)
Back tension	CQ-102C	1.5 – 6g•cm (0.021 – 0.083 oz•inch)
REV Playback	CQ-102RC	30 – 75g•cm (0.42 – 1.04 oz•inch)
Back tension	CQ-102RC	1.5 – 6g•cm (0.021 – 0.083 oz•inch)
Rewind	CQ-201B	60 – 130g•cm (0.834 – 1.805 oz•inch)
Fast Forward		

DECK B

Mode	Torque Meter	Meter Reading
Playback	CQ-102C	30 – 70g•cm (0.42 – 0.97 oz•inch)
Back tension	CQ-102C	1.5 – 5.5g•cm (0.021 – 0.076 oz•inch)
Rewind	CQ-201B	55 – 135g•cm (0.764 – 1.874 oz•inch)
Fast Forward		

2. Tape Tension Measurement

DECK A

Mode	Tension Meter	Meter Reading
FWD	CQ-403A	more than 90g (3.18 oz)
REV	CQ-403R	more than 90g (3.18 oz)

DECK B

Mode	Tension Meter	Meter Reading
FWD	CQ-403A	more than 100g (3.53 oz)

4-2. ELECTRICAL ADJUSTMENTS

TAPE SECTION

1. The adjustments should be performed in the order given in the service manual. (As a general rule. playback circuit adjustment should be completed before performing recording circuit adjustment.)
2. The adjustments should be performed for both L-CH and R-CH unless otherwise indicated.

● Switch location

FUNCTION ····· TAPE (RADIO OFF)
GRAPHIC EQUALIZER·· center click
BALANCE ····· center click
VOLUME ····· mechanical center
BASS BOOST ····· mechanical center

Standard Input Level

	MIC IN
source impedance	300 Ω
input level	3.085mV(– 48dB)

Standard Output Level

	SP OUT	PHONES
load impedance	3.2 Ω	32 Ω
output level	0.775V(0dB)	0.25V(– 10dB)

Test Tape

Type	Signal	Used for
WS-48B	3kHz, 0dB	Tape Speed Adjustment
P-4-A063	6.3kHz, – 10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment

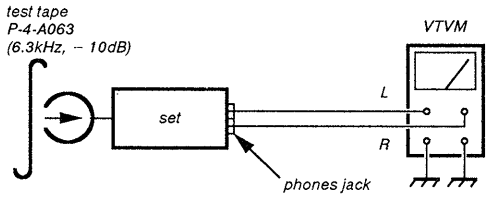
0 dB=0.775V

Record/playback Head Azimuth Adjustment

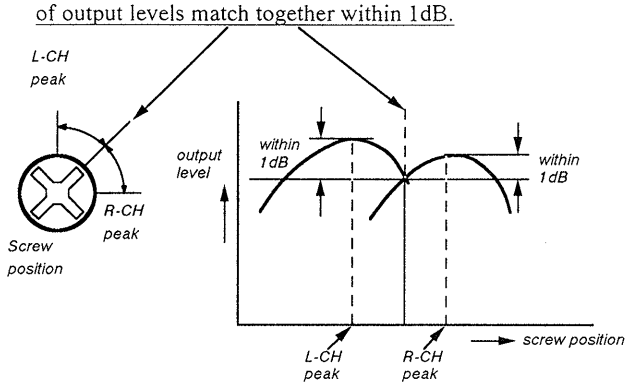
DECK A DECK B

Procedure :

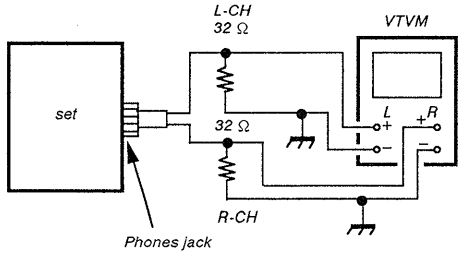
1. Mode : playback

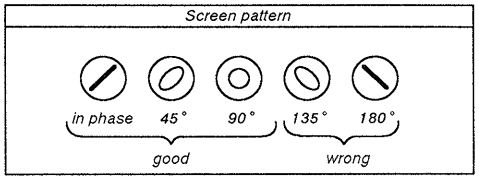


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.



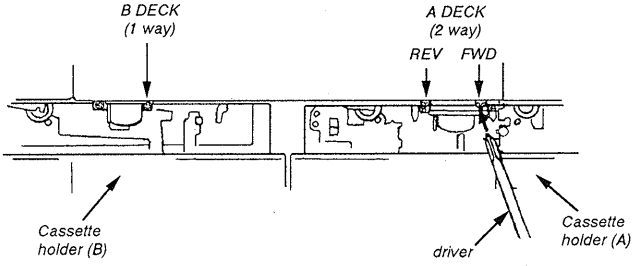
Phase Check
Mode : playback





3. Set in the reverse mode and repeat the steps 1-2. (deck A only)
4. After the adjustment, lock the screws with locking compound.

Adjustment Location :

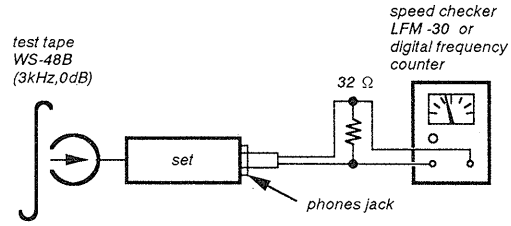


Tape Speed Adjustment

DECK A DECK B

Procedure :

Mode : playback



Adjustment Values :

Adjustment part	Speed checker	Digital frequency counter
VR201	± 3%	2,910 to 3,090Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30Hz).

Note : (High speed : non adjustment)

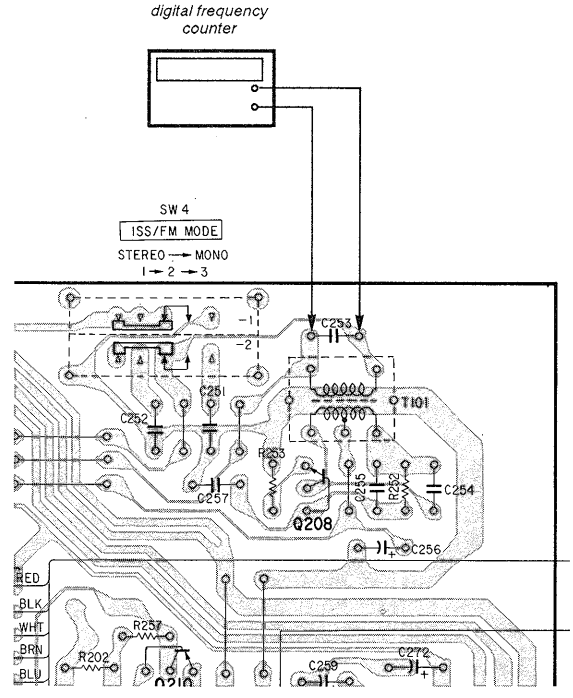
Adjustment Location : Main board

Record Bias OSC Frequency Adjustment

DECK B

Procedure :

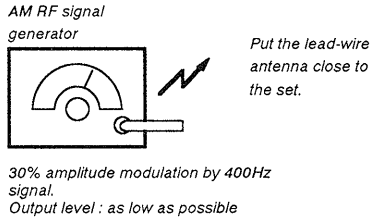
ISS/FM mode SW : 2 (CENTER)



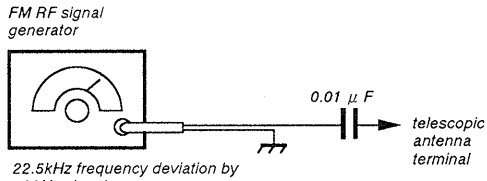
1. The set should be under no signal conditions recording mode.
2. Connect the frequency counter to C253 on the MAIN board.
3. Adjust with T101 so that the record bias OSC frequency is 60kHz.

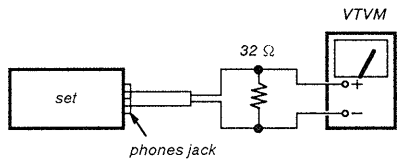
TUNER SECTION

AM Section


AM RF signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400Hz signal.
Output level : as low as possible

FM Section


FM RF signal generator
0.01 μ F
telescopic antenna terminal
22.5kHz frequency deviation by 400Hz signal.
Output level : as low as possible



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

no mark : US model
( ) : AEP model

AM IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
T1	455kHz

AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	515kHz
CT4	1,780kHz (1,680kHz)

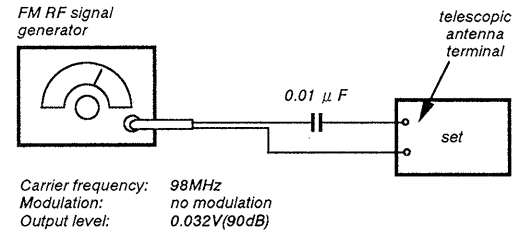
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	600kHz
CT3	1,400kHz

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L2	86.5MHz (87.0MHz)
CT2	109.5MHz (108.3MHz)

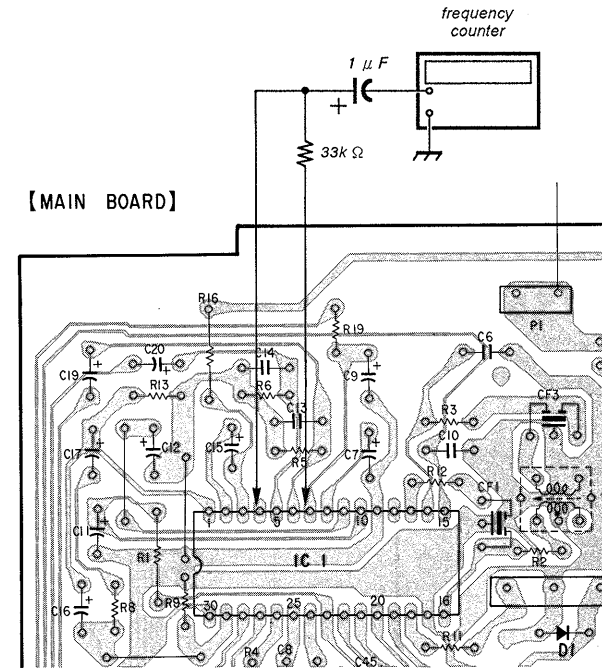
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1	86.5MHz (87.0MHz)
CT1	109.5MHz (108.3MHz)

VCO Adjustment

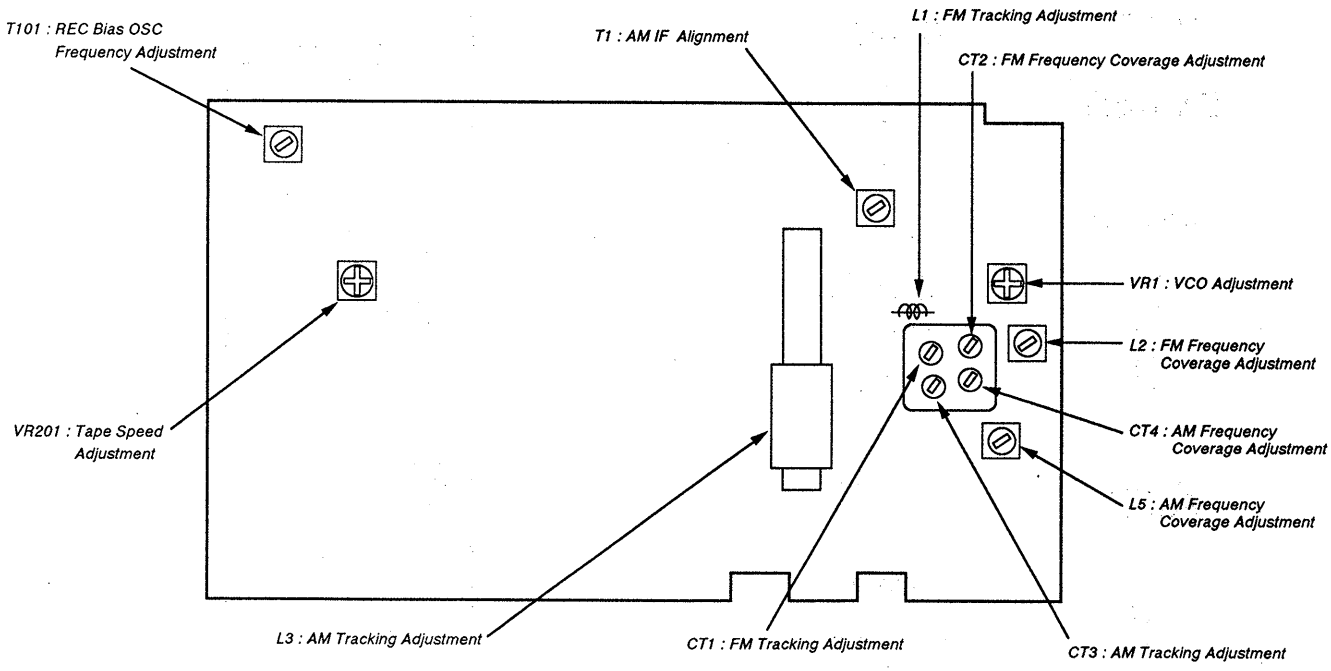
procedure :



1. Connect the frequency counter to ④ and ⑦ pins of IC1 as shown the figure below.
2. Turn the set to 98MHz.
3. Adjust VR1 for 76kHz ± 500Hz reading on frequency counter.



Adjustment Location : Main board (Component side)


T101 : REC Bias OSC Frequency Adjustment
T1 : AM IF Alignment
L1 : FM Tracking Adjustment
CT2 : FM Frequency Coverage Adjustment
VR1 : VCO Adjustment
L2 : FM Frequency Coverage Adjustment
CT4 : AM Frequency Coverage Adjustment
L5 : AM Frequency Coverage Adjustment
VR201 : Tape Speed Adjustment
L3 : AM Tracking Adjustment
CT1 : FM Tracking Adjustment
CT3 : AM Tracking Adjustment

SECTION 5
DIAGRAMS

● SEMICONDUCTOR LEAD LAYOUTS

BA3822LS

2SA733-K
2SC2001-LK

DTA114ES

RD5.1F-B2
RD6.8F-B2
10E2

DTC114TS
RN1203

1SS202-1

KTC9013

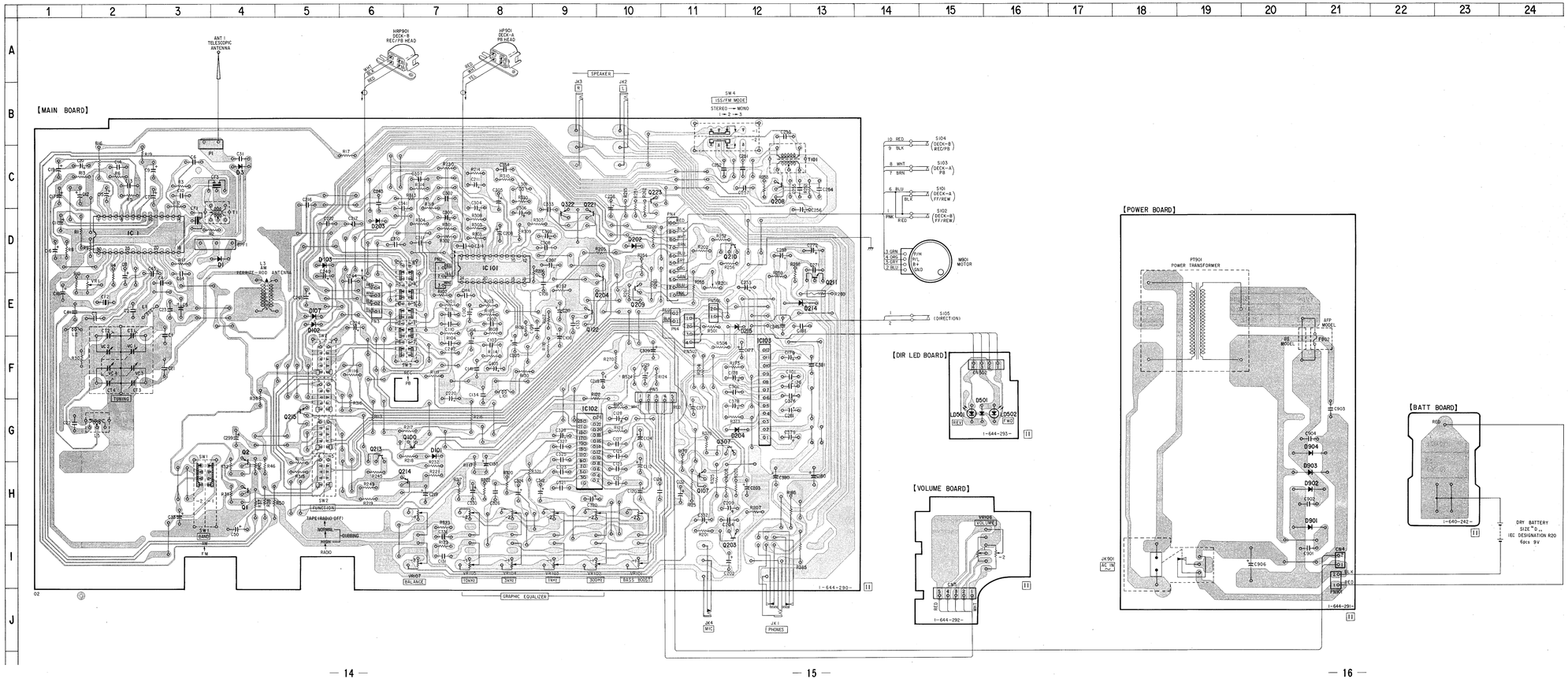
● SEMICONDUCTOR LOCATION

Ref. No.	Location
D1	D - 4
D3	C - 4
D101	G - 7
D102	E - 5
D103	D - 5
D107	E - 5
D202	D - 10
D203	D - 6
D204	G - 12
D214	E - 13
D215	E - 12
D501	G - 15
D901	I - 21
D902	H - 21
D903	H - 21
D904	G - 21
LD501	G - 15
LD502	G - 16
IC1	D - 2
IC101	D - 8
IC102	G - 9
IC103	F - 12
Q1	H - 4
Q2	H - 4
Q100	G - 7
Q107	H - 11
Q122	E - 9
Q203	I - 12
Q204	E - 10
Q208	C - 12
Q209	E - 10
Q210	D - 12
Q211	E - 13
Q213	G - 6
Q214	H - 7
Q215	G - 5
Q221	D - 9
Q223	C - 10
Q307	G - 12
Q322	D - 9

Note :

- ○—: parts extracted from the component side.
- ▒▒▒: Pattern on the side which is seen.

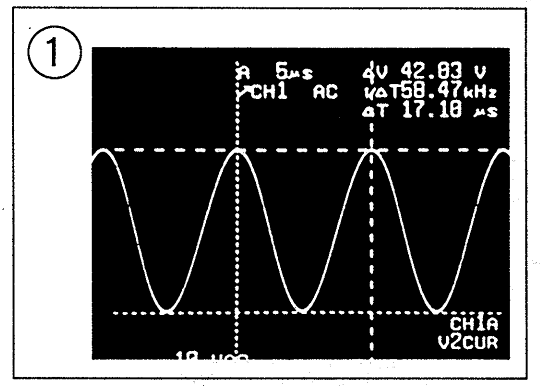
5-1. PRINTED WIRING BOARDS



5-2. SCHEMATIC DIAGRAM • Refer to page 21 for IC Block Diagrams.

[MAIN BOARD]
[VOLUM BOARD]
[POWER BOARD]
[DIR LED BOARD]
IC1 CXA1238S
IC1 CXA1238S FM/AM FRONT-END IF AMP, DET, FM MPX
IC101 TA8189N PRE/REC AMP
IC102 BA3822L GRAPHIC EQUALIZER
IC102 BA3822L (1/2)
IC103 KIA7282 POWER AMP
BIAS CIRCUIT THERMAL SHUT DOWN PROTECTION
ANT 1 TELESCOPIC ANTENNA
L3 AM FERRITE-ROD ANTENNA
JK4 MIC
JK1 PHONES
JK2 SPEAKER L
JK3 SPEAKER R
JK901 AC IN
HRP901-1 DECK-B RECORD/PLAYBACK HEAD
HP901-1 DECK-A PLAYBACK HEAD
HP901-2 DECK-A PLAYBACK HEAD
HRP901-2 DECK-B RECORD/PLAYBACK HEAD
HE901 ERASE HEAD
L-CH
R-CH
M901 MOTOR
SW2 FUNCTION RADIO → HIGH → NORMAL → TAPE (RADIO OFF)
SW4-1 ISS/FM MODE STEREO STEREO MONO
SW1-1 BAND FM AM
S105 DIRECTION
LD501,502 SLR34VR70F65
OPR/BATT
TOTAL CURRENT
FM : 65mA
AM : 60mA
DECK-A PLAY : 158mA FF : 133mA REW : 133mA
DECK-B PLAY : 150mA REC : 163mA FF : 135mA REW : 135mA
DUBBING NORMAL : 187mA HIGH : 200mA
DRY BATTERY SIZE "D" IEC DESIGNATION R20 6PCS 9V
AEP MODEL
US MODEL
PT901 POWER TRANSFORMER
D901-904 1N4002

• WAVEFORM



Note :

- All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- [fusible resistor symbol] : fusible resistor.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

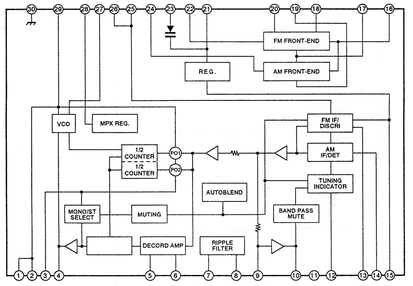
- B+ : B+ Line
- ▭ : adjustment for repair.
- Power voltage is dc 9V and fed with regulated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.

  no mark : FM (RADIO SECTION)
  ( ) : AM (RADIO SECTION)
  no mark : PLAYBACK (AUDIO SECTION)
  ( ) : REC (AUDIO SECTION)
  ( ) : STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.

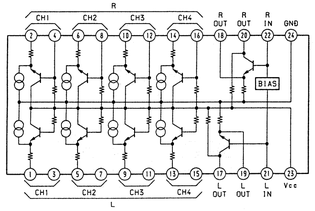
  ⇨ : FM
  ⊳ : PB (DECK-A)
  ▷ : PB (DECK-B)
  ▷» : REC

• IC BLOCK DIAGRAMS

IC1 CXA1238S



IC102 BA3822L



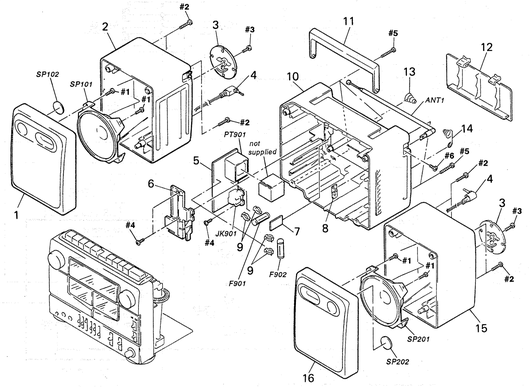
SECTION 6
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark)list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

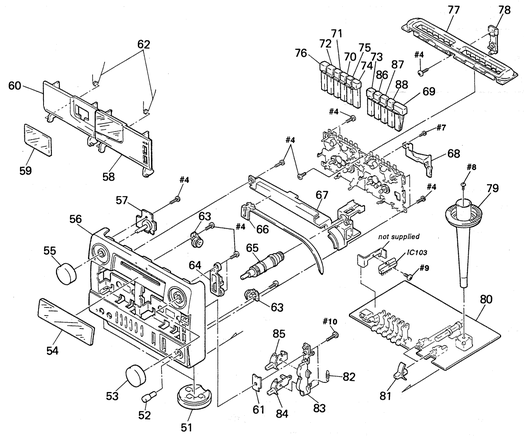
- **Abbreviations**
  E12 : 220 ~ 240V AC, AREA
  E23 : 110 ~ 120V AV, AREA
  EA : Saudi Arabia
  UAE : United Arab Emirates

6-1. GENERAL SECTION-1



Ref.No.	Part No.	Description	Remark
1	X-3365-407-1	FRONT (L) ASSY, SPEAKER	
2	3-381-478-01	SPEAKER BACK (L)	
3	3-381-479-01	HOLDER SPEAKER	
4	1-575-951-11	CORD, SPEAKER	
* 5	1-644-295-11	POWER BOARD	
6	3-381-472-01	HOLDER P/T	
* 7	1-640-242-11	BATT BOARD	
8	3-381-471-01	ANT LUG	
⚠9	1-533-243-11	HOLDER, FUSE	
10	3-381-487-01	CABINET (REAR)	
11	3-381-470-01	HANDLE	
12	3-381-439-01	LID, BATTERY CASE	
13	3-397-813-01	BATTERY SPRING (-)	
14	3-397-812-01	BATTERY SPRING (+/-)	
15	3-381-482-01	SPEAKER BACK (R)	
16	X-3365-408-1	FRONT (R) ASSY, SPEAKER	
ANT1	1-501-544-11	ANTENNA, TELESCOPIC	
⚠F901	1-532-612-00	FUSE, TIME-LAG (0.16A/250V)	
⚠F902	1-532-259-00	FUSE, TIME-LAG (1.60A/250V)	
⚠JK901	1-540-189-11	SOCKET, AC (AC IN~)(E,UAE)	
⚠JK901	1-526-838-11	INLET, AC 2P (AC IN~)(EA)	
⚠PT901	1-448-778-11	TRANSFORMER, POWER	
SP101	1-544-764-11	SPEAKER (10CM)	
SP102	1-529-047-11	BUZZER	
SP201	1-544-764-11	SPEAKER (10CM)	
SP202	1-529-047-11	BUZZER	

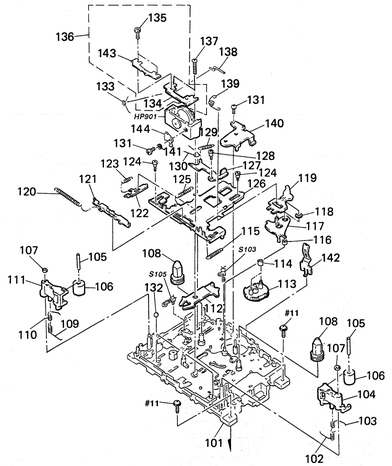
6-2. GENERAL SECTION-2



Ref.No.	Part No.	Description	Remark
51	3-381-444-01	FOOT RING	
52	3-381-486-01	KNOB FINE TUNING	
53	X-3365-406-1	TUNING ASSY, KNOB	
54	3-381-721-01	WINDOW SCALE (E12,E23,UAE)	
54	3-382-393-01	WINDOW SCALE (EA)	
55	3-381-445-01	KNOB VOLUME	
56	X-3365-602-1	FRONT ASSY, CABINET	
* 57	1-644-292-11	VOLUME BOARD	
58	A-3263-043-A	HOLDER (A) ASSY, CASSETTE	
59	3-382-698-01	WINDOW CASSETTE (B)	
60	3-382-697-01	HOLDER (B), CASSETTE	
* 61	1-644-297-11	DIR LED BOARD	
62	3-381-441-01	SPRING EJECT	
63	3-384-796-01	DAMPER GEAR ASSY	
64	3-381-442-01	HOLDER DOOR	
65	3-381-453-01	GEAR TUNING	
66	3-381-452-01	GEAR POINTER	
67	3-381-451-01	CHASSIS TUNING	
68	3-381-468-01	REC LEVER	
69	3-382-683-01	KNOB DECK PLAY-R (A)	
70	3-381-463-01	KNOB DECK REW	
71	3-381-462-01	KNOB DECK FF	
72	3-381-461-01	KNOB DECK STOP/EJECT	
73	3-382-682-01	KNOB DECK PAUSE-R (A)	
74	3-381-465-01	KNOB DECK PLAY (B)	
75	3-381-464-01	KNOB DECK REC	
76	3-381-460-01	KNOB DECK PAUSE (B)	
77	3-382-687-01	TOP CASE	
78	3-382-689-01	HOLDER TOP	
79	3-381-454-01	GEAR PULLEY	
* 80	A-3275-650-A	MAIN BOARD, COMPLETE (E12,E23,UAE)	
* 80	A-3275-689-A	MAIN BOARD, COMPLETE (EA)	
81	3-381-448-01	KNOB FUNCTION	
82	3-382-693-01	SPRING DIRECTION	
83	3-382-690-01	HOLDER DIRECTION	
84	3-382-692-01	KNOB DIR	
85	3-382-691-01	KNOB DIR MODE	
86	3-382-684-01	KNOB DECK STOP/EJECT-R (A)	
87	3-382-685-01	KNOB DECK FF-R (A)	
88	3-382-686-01	KNOB DECK REW-R (A)	
IC103	8-759-205-82	IC TA7282AP	

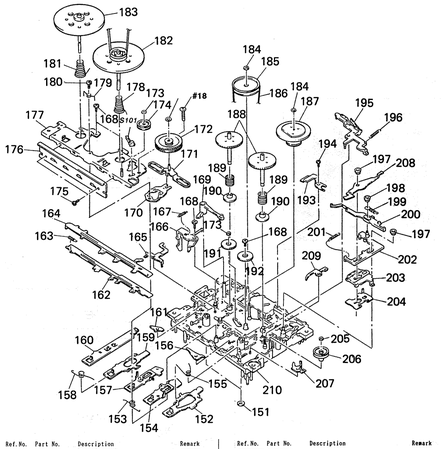
Ver 1.1 2002.09

6-3. MECHANISM SECTION-1 (DECK A-1)
(MF-W470 : LWA22RF-01)



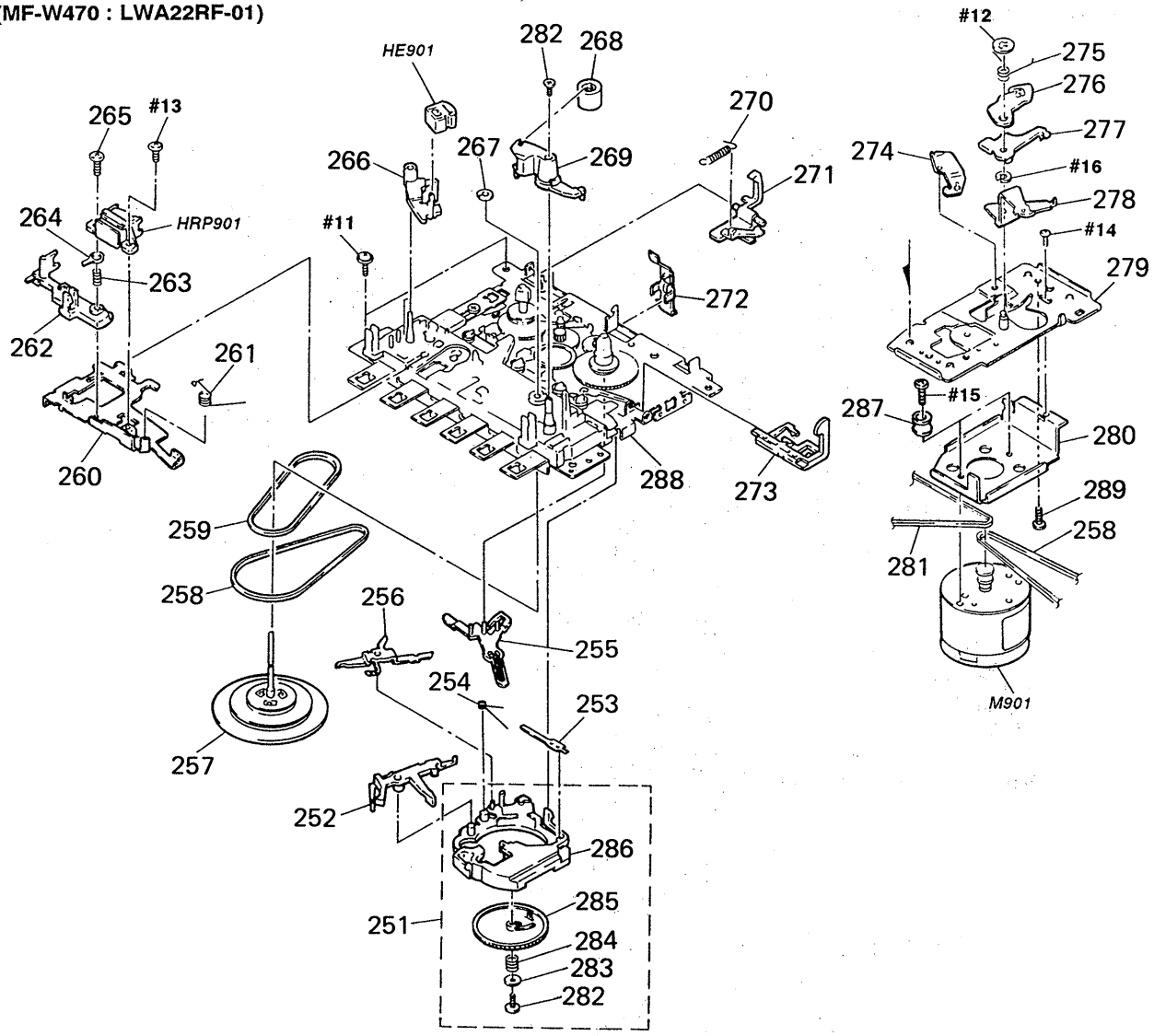
Ref.No.	Part No.	Description	Remark
* 101	X-3365-600-1	ASSY MECHA CHASSIS	
102	3-393-150-01	SPRING	
103	3-393-151-01	SPRING	
104	3-393-111-01	ARM PINCH-R	
105	3-391-065-01	ROLLER SHAFT	
106	3-393-149-01	ROLLER PINCH	
107	3-393-227-01	WASHER	
108	3-391-086-01	CAP REEL	
109	3-393-152-01	SPRING	
110	3-393-153-01	SPRING	
111	3-393-112-01	ARM PINCH-L	
* 112	3-391-090-01	PLATE REVERSE-C	
113	X-3391-007-1	ASSY REVERSE GEAR C	
114	3-391-089-01	COLLER B	
115	3-391-095-01	SPRING	
116	3-382-596-01	COLLAR	
117	X-3391-008-1	ASSY IDLER PLATE	
118	3-369-852-01	COLLAR	
* 119	3-391-091-01	PLATE REVERSE-D	
120	3-393-106-01	SPRING	
* 121	3-369-937-01	PLATE ASSY, SLIDE	
* 122	3-369-941-01	LEVER, GEAR STOP	
123	3-369-942-01	SPRING	
124	3-393-221-01	SCREW	
125	3-391-096-01	SPRING	
126	X-3391-009-1	ASSY HEAD CHASSIS	
* 127	3-391-092-01	PLATE MO JOINT	
128	3-396-808-01	SCREW	
129	3-391-093-01	SPRING	
130	3-381-094-01	SPRING	
131	4-894-960-01	BUSH	
132	3-382-597-01	STEEL BALL	
133	3-393-105-01	SPRING	
134	3-396-731-01	PLATE AZIMUTH	
135	3-396-733-01	SCREW AZIMUTH	
136	X-3365-801-1	ASSY AZIMUTH PLATE	
137	3-393-218-01	SCREW	
138	3-396-737-01	SPRING	
139	3-363-223-01	SPRING	
140	3-393-109-01	HOLDER GEAR	
* 141	3-369-954-01	WASHER	
* 142	3-384-210-01	PLATE SPRING	
143	3-394-026-01	AZIMUTH SP PLATE	
144	3-393-104-01	HEAD GEAR B	
HP901	X-3365-802-1	ASSY HEAD (PLAYBACK HEAD)	
S103	1-692-561-11	SWITCH, LEAF (DECK-A PB)	
S105	1-692-561-11	SWITCH, LEAF (DIRECTION)	

6-4. MECHANISM SECTION-2 (DECK A-2)
(MF-W470 : LWA22RF-01)



Ref.No.	Part No.	Description	Remark
151	3-396-818-01	WASHER	
* 152	3-393-171-01	LEVER PLAY B	
153	3-393-165-01	SPRING	
* 154	3-369-944-01	LEVER, REW	
155	3-393-167-01	SPRING	
156	3-393-170-01	ARM CUE STOP	
* 157	3-369-943-01	LEVER, FF	
158	3-393-159-01	SPRING	
159	3-393-166-01	LEVER STOP	
160	3-393-156-01	LEVER PAUSE	
161	3-393-158-01	ARM PAUSE	
* 162	3-369-945-01	PLATE, FUNCTION (A)	
163	3-393-175-01	SPRING	
* 164	3-369-946-01	PLATE, FUNCTION (B)	
165	3-393-155-01	PLATE SENSER STOP	
166	3-396-773-01	LEVER EJECT	
167	3-393-179-01	SPRING	
168	4-894-960-01	BUSH	
169	3-393-190-01	ARM SENSER STOP	
170	3-393-176-01	LEVER FF IDLER	
171	X-3391-012-1	ASSY FF IDLER PLATE	
172	X-3391-016-1	ASSY FF TENTION A	
173	3-382-601-01	WASHER	
* 174	3-369-948-01	PULLEY	
175	3-396-801-01	SCREW	
* 176	3-396-850-01	HOLDER	
* 177	3-369-947-01	HOLDER ASSY, LEVER	
178	3-393-205-01	SPRING	
179	3-393-177-01	SPRING	
180	3-393-221-01	SCREW	
181	3-393-206-01	SPRING	
182	3-369-949-01	FLYWHEEL (R) ASSY	
183	3-369-950-01	FLYWHEEL (F) ASSY	
184	3-393-224-01	WASHER	
185	3-393-191-01	PULLY DRIVE	
186	3-681-447-00	BELT	
187	X-3391-015-1	ASSY TENTION	
188	3-391-095-01	GEAR REEL	
189	3-391-087-01	SPRING	
190	3-391-088-01	REEL BUSH-D	
191	3-393-154-01	GEAR IDLER	
192	3-391-084-01	GEAR FWD	
193	3-396-790-01	PLATE SPRING DR	
194	3-396-791-01	SCREW	
* 195	3-393-183-01	LEVER DR	
196	3-396-789-01	SPRING	
197	3-393-189-01	BUSH	
198	3-379-197-01	BUSH	
199	3-379-178-01	SPRING	
* 200	3-393-185-01	LEVER SENSER-B	
201	3-393-187-01	SPRING	
* 202	3-393-184-01	LEVER SENSER	
* 203	3-393-181-01	LEVER MO	
* 204	3-393-180-01	PLATE MO	
205	3-382-601-01	WASHER	
206	3-393-192-01	PULLY	
207	3-393-168-01	PLATE SWITCH-A	
208	3-394-078-01	CANCEL LEVER B	
209	3-393-169-01	PLATE SWITCH-C	
* 210	X-3365-800-1	ASSY MECHA CHASSIS	
S101	1-571-556-11	SWITCH, LEAF (DECK-A FF/REW)	

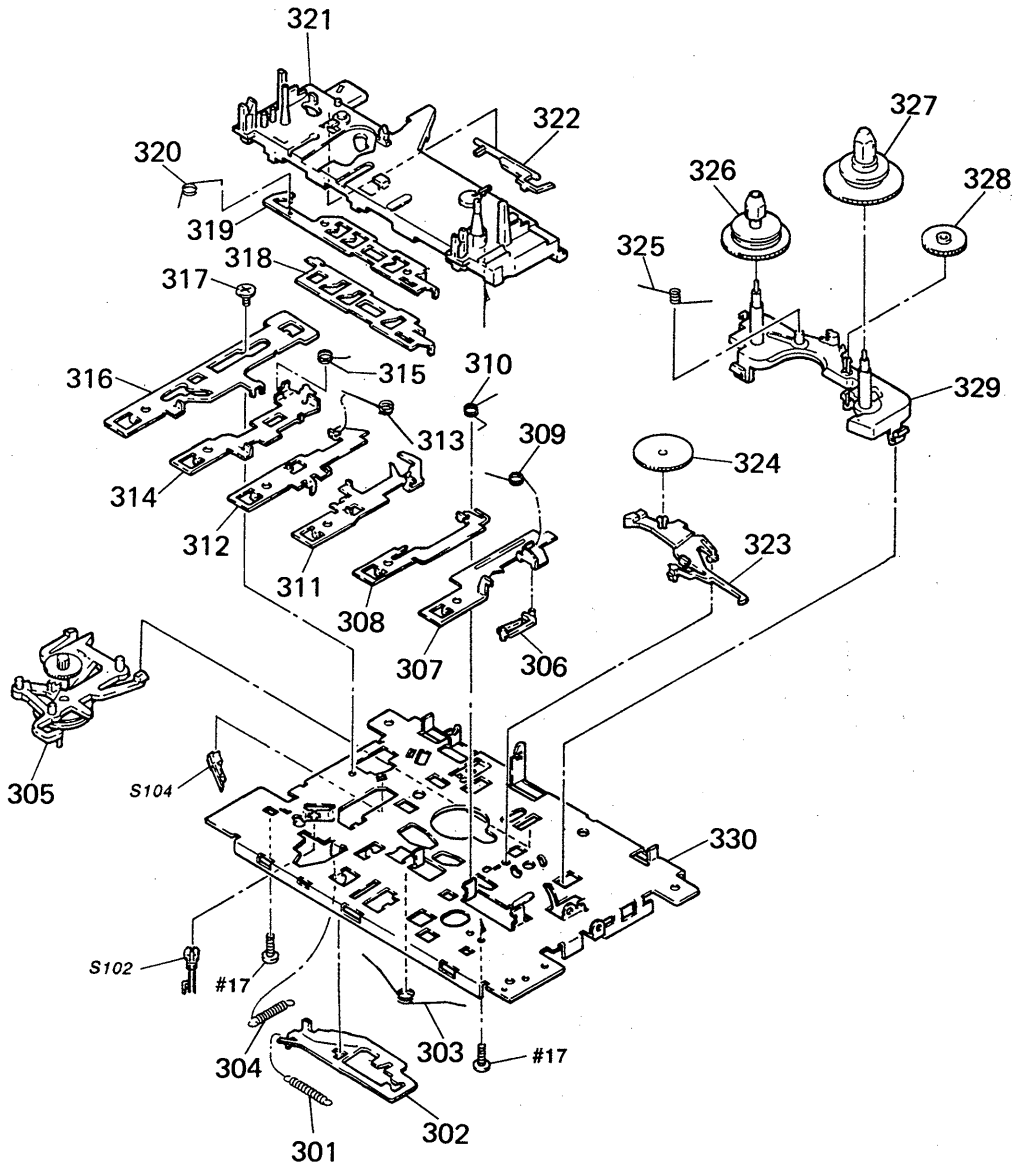
6-5. MECHANISM SECTION-3 (DECK B-1)
(MF-W470 : LWA22RF-01)



Ref. No.	Part No.	Description	Remark
251	X-3363-315-1	GEAR ASSY, CAM	
252	3-362-975-01	LEVER, SENSOR	
253	3-362-978-01	SPRING, PLATE	
254	3-362-977-01	SPRING	
255	3-362-972-01	SENSOR	
256	3-362-976-01	LEVER, CONTROL	
257	3-369-446-01	FW ASSY	
258	3-369-931-01	BELT	
259	3-362-989-01	BELT	
* 260	3-362-984-01	HEAD (BASE)	
261	3-362-983-01	SPRING	
262	3-362-986-01	HOLDER, HEAD	
263	3-362-985-01	SPRING	
264	3-363-230-01	LUG	
265	3-363-229-01	SCREW	
266	3-362-987-01	ARM, EH	
267	3-362-980-01	WASHER	
268	3-362-982-01	PINCH ROLLER	
269	3-362-981-01	PINCH ARM	
270	3-384-212-01	SPRING	
271	3-362-966-01	INTER LOCK	

Ref. No.	Part No.	Description	Remark
272	3-362-967-01	SPRING, CASSETTE	
273	3-362-968-01	LEVER, EJECT	
* 274	3-396-799-01	ASSY PAUSE ARM	
275	4-895-003-01	SPRING	
276	4-895-004-01	LOCK PLATE	
* 277	3-382-607-01	PLATE CANCEL	
* 278	3-382-606-01	ARM CONNECT	
279	3-384-211-01	ASSY CONNECT PLATE	
* 280	3-382-603-01	HOLDER MOTOR	
281	3-396-797-01	BELT	
282	3-366-352-01	SCREW	
283	3-369-961-01	WASHER	
284	3-369-962-01	SPRING, COMPRESSION	
285	3-362-974-01	GEAR, CAM	
286	3-362-973-01	AS (BASE)	
287	3-343-897-01	WASHER, RUBBER	
* 288	3-362-941-01	CHASSIS	
289	3-385-977-01	SCREW	
HE901	1-543-777-11	HEAD, MAGNETIC (ERASING)	
HRP901	1-543-424-21	HEAD (RECORD/PLAYBACK)	
M901	3-382-604-01	MOTOR ASSY	

6-6. MECHANISM SECTION-4 (DECK B-2)
(MF-W470 : LWA22RF-01)



Ref. No.	Part No.	Description	Remark
301	3-371-920-01	SPRING	
* 302	3-371-919-01	PLATE FR STOP	
303	3-362-970-01	SPRING	
304	3-362-971-01	SPRING	
305	3-362-969-01	IDLER ASSY, PF	
306	3-362-953-01	ARM, PAUSE	
* 307	3-362-952-01	LEVER, PAUSE	
* 308	3-362-951-01	LEVER, SE	
309	3-370-698-01	SPRING	
310	3-362-956-01	SPRING	
* 311	3-362-950-01	LEVER, FF	
* 312	3-362-949-01	LEVER, REW	
313	3-362-955-01	SPRING	
* 314	3-362-948-01	LEVER, PLAY	
315	3-362-954-01	SPRING	
* 316	3-362-947-01	LEVER, REC	

Ref. No.	Part No.	Description	Remark
317	3-362-958-01	SCREW	
* 318	3-362-946-01	LEVER, SW	
* 319	3-362-943-01	PLATE, FUNCTION	
320	3-362-945-01	SPRING	
321	3-382-602-01	ASSY FRAM	
322	3-362-944-01	STOPPER, REC	
323	3-362-959-01	ARM, IDLER	
324	3-362-960-01	PULLEY, IDLER	
325	3-372-120-01	SPRING	
326	3-362-963-01	REEL, S	
327	3-362-962-01	REEL ASSY, T	
328	3-362-965-01	IDLER, FF	
329	3-362-961-01	SPINDLE (BASE)	
* 330	3-362-941-01	CHASSIS	
S102	1-572-538-11	SWITCH, LEAF (DECK-B FF/REW)	
S104	1-692-361-11	SWITCH, LEAF (DECK-B PB/REC)	

SECTION 7
ELECTRICAL PARTS LIST

BATT **DIR LED** **MAIN**

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μA.... , uPA.... : μPA....
  uPB.... : μPB.... , uPC.... : μPC....
  uPD.... : μPD....
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	1-640-242-11	BATT BOARD			
		**********			
**********					
	1-644-297-11	DIR LED BOARD			
		**********			
		< DIODE >			
D501	8-719-107-94	DIODE 1SS202-1			
LD501	8-719-948-75	LED SLR34VR70F165 (REV)			
LD502	8-719-948-75	LED SLR34VR70F165 (FWD)			
**********					
*	A-3275-760-A	MAIN BOARD, COMPLETE (AEP)			
		**********			
*	A-3275-761-A	MAIN BOARD, COMPLETE (US)			
		**********			
	7-682-547-04	SCREW +BVTT 3X6 (S)			
		< BAND PASS FILTER >			
BPF1	1-236-895-11	FILTER, BAND PASS			
		< CAPACITOR >			
C1	1-162-208-31	CERAMIC	24PF	5%	50V
C2	1-102-959-00	CERAMIC	22PF	5%	50V
C3	1-162-193-31	CERAMIC	3.3PF	10%	50V
C4	1-161-379-00	CERAMIC	0.01uF	20%	25V
C5	1-124-034-51	ELECT	33uF	20%	16V
C6	1-162-287-31	CERAMIC	270PF	10%	50V
C7	1-124-126-00	ELECT	47uF	20%	10V
C8	1-123-382-00	ELECT	3.3uF	20%	100V
C9	1-124-126-00	ELECT	47uF	20%	10V
C10	1-161-379-00	CERAMIC	0.01uF	20%	25V
C11	1-124-927-11	ELECT	4.7uF	20%	100V
C12	1-124-903-11	ELECT	1uF	20%	50V
C13	1-130-484-00	MYLAR	0.012uF	5%	50V
C14	1-130-484-00	MYLAR	0.012uF	5%	50V
C15	1-124-903-11	ELECT	1uF	20%	50V
C16	1-124-902-00	ELECT	0.47uF	20%	50V
C17	1-124-927-11	ELECT	4.7uF	20%	100V
C18	1-124-907-11	ELECT	10uF	20%	50V
C19	1-124-463-00	ELECT	0.1uF	20%	50V
C20	1-124-463-00	ELECT	0.1uF	20%	50V
C22	1-162-195-31	CERAMIC	4.7PF	10%	50V
C23	1-161-379-00	CERAMIC	0.01uF	20%	25V
C31	1-162-286-31	CERAMIC	220PF	10%	50V
C33	1-123-382-00	ELECT	3.3uF	20%	100V
C34	1-162-193-31	CERAMIC	3.3PF	10%	50V
C41	1-161-379-00	CERAMIC	0.01uF	20%	25V
C45	1-124-903-11	ELECT	1uF	20%	50V
C50	1-126-176-11	ELECT	220uF	20%	10V
C100	1-124-126-00	ELECT	47uF	20%	10V
C101	1-162-286-31	CERAMIC	220PF	10%	50V
C102	1-130-487-00	MYLAR	0.022uF	5%	50V
C104	1-123-382-00	ELECT	3.3uF	20%	100V
C105	1-123-382-00	ELECT	3.3uF	20%	100V
C106	1-124-126-00	ELECT	47uF	20%	10V
C107	1-130-471-00	MYLAR	0.001uF	5%	50V
C108	1-162-294-31	CERAMIC	0.001uF	10%	50V
C109	1-123-382-00	ELECT	3.3uF	20%	100V
C110	1-162-292-31	CERAMIC	680PF	10%	50V
C111	1-162-292-31	CERAMIC	680PF	10%	50V
C112	1-124-252-00	ELECT	0.33uF	20%	50V
C114	1-162-282-31	CERAMIC	100PF	10%	50V
C120	1-124-903-11	ELECT	1uF	20%	50V
C121	1-130-489-00	MYLAR	0.033uF	5%	50V
C123	1-161-050-00	CERAMIC	0.0082uF	10%	25V
C124	1-124-463-00	ELECT	0.1uF	20%	50V

MAIN

Ref. No.	Part No.	Description			Remark
C125	1-161-327-00	CERAMIC	0.0033uF	30%	16V
C126	1-130-489-00	MYLAR	0.033uF	5%	50V
C127	1-162-294-31	CERAMIC	0.001uF	10%	50V
C128	1-124-903-11	ELECT	1uF	20%	50V
C129	1-124-903-11	ELECT	1uF	20%	50V
C130	1-124-903-11	ELECT	1uF	20%	50V
C131	1-161-494-00	CERAMIC	0.022uF		25V
C132	1-123-382-00	ELECT	3.3uF	20%	100V
C133	1-161-494-00	CERAMIC	0.022uF		25V
C134	1-130-483-00	MYLAR	0.01uF	5%	50V
C141	1-162-282-31	CERAMIC	100PF	10%	50V
C176	1-162-294-31	CERAMIC	0.001uF	10%	50V
C177	1-124-902-00	ELECT	0.47uF	20%	50V
C178	1-124-126-00	ELECT	47uF	20%	10V
C179	1-126-101-11	ELECT	100uF	20%	16V
C180	1-124-360-00	ELECT	1000uF	20%	16V
C181	1-130-497-00	MYLAR	0.15uF	5%	50V
C202	1-124-903-11	ELECT	1uF	20%	50V
C203	1-126-233-11	ELECT	22uF	20%	50V
C204	1-162-282-31	CERAMIC	100PF	10%	50V
C205	1-124-925-11	ELECT	2.2uF	20%	100V
C207	1-124-126-00	ELECT	47uF	20%	10V
C208	1-123-382-00	ELECT	3.3uF	20%	100V
C209	1-124-927-11	ELECT	4.7uF	20%	100V
C210	1-124-927-11	ELECT	4.7uF	20%	100V
C211	1-124-927-11	ELECT	4.7uF	20%	100V
C216	1-162-282-31	CERAMIC	100PF	10%	50V
C217	1-162-282-31	CERAMIC	100PF	10%	50V
C218	1-124-119-00	ELECT	330uF	20%	16V
C219	1-124-902-00	ELECT	0.47uF	20%	50V
C220	1-124-119-00	ELECT	330uF	20%	16V
C222	1-162-282-31	CERAMIC	100PF	10%	50V
C224	1-124-927-11	ELECT	4.7uF	20%	100V
C233	1-124-120-11	ELECT	220uF	20%	25V
C240	1-124-907-11	ELECT	10uF	20%	50V
C242	1-162-282-31	CERAMIC	100PF	10%	50V
C243	1-162-282-31	CERAMIC	100PF	10%	50V
C244	1-162-282-31	CERAMIC	100PF	10%	50V
C245	1-124-907-11	ELECT	10uF	20%	50V
C251	1-162-286-31	CERAMIC	220PF	10%	50V
C252	1-162-290-31	CERAMIC	470PF	10%	50V
C253	1-130-471-00	MYLAR	0.001uF	5%	50V
C254	1-130-485-00	MYLAR	0.015uF	5%	50V
C255	1-161-377-00	CERAMIC	0.0047uF	30%	16V
C256	1-124-443-00	ELECT	100uF	20%	10V
C257	1-130-483-00	MYLAR	0.01uF	5%	50V
C258	1-124-443-00	ELECT	100uF	20%	10V
C259	1-126-103-11	ELECT	470uF	20%	16V
C261	1-126-176-11	ELECT	220uF	20%	10V

Ref. No.	Part No.	Description			Remark
C271	1-161-494-00	CERAMIC	0.022uF		25V
C272	1-124-119-00	ELECT	330uF	20%	16V
C299	1-123-382-00	ELECT	3.3uF	20%	100V
C300	1-124-126-00	ELECT	47uF	20%	10V
C301	1-162-286-31	CERAMIC	220PF	10%	50V
C302	1-130-487-00	MYLAR	0.022uF	5%	50V
C304	1-123-382-00	ELECT	3.3uF	20%	100V
C305	1-123-382-00	ELECT	3.3uF	20%	100V
C306	1-124-126-00	ELECT	47uF	20%	10V
C307	1-130-471-00	MYLAR	0.001uF	5%	50V
C308	1-162-294-31	CERAMIC	0.001uF	10%	50V
C309	1-123-382-00	ELECT	3.3uF	20%	100V
C310	1-162-292-31	CERAMIC	680PF	10%	50V
C311	1-162-292-31	CERAMIC	680PF	10%	50V
C312	1-124-252-00	ELECT	0.33uF	20%	50V
C314	1-162-282-31	CERAMIC	100PF	10%	50V
C320	1-124-903-11	ELECT	1uF	20%	50V
C321	1-130-489-00	MYLAR	0.033uF	5%	50V
C323	1-161-050-00	CERAMIC	0.0082uF	10%	25V
C324	1-124-463-00	ELECT	0.1uF	20%	50V
C325	1-161-327-00	CERAMIC	0.0033uF	30%	16V
C326	1-130-489-00	MYLAR	0.033uF	5%	50V
C327	1-162-294-31	CERAMIC	0.001uF	10%	50V
C328	1-124-903-11	ELECT	1uF	20%	50V
C329	1-124-903-11	ELECT	1uF	20%	50V
C330	1-124-903-11	ELECT	1uF	20%	50V
C331	1-161-494-00	CERAMIC	0.022uF		25V
C332	1-123-382-00	ELECT	3.3uF	20%	100V
C333	1-161-494-00	CERAMIC	0.022uF		25V
C334	1-130-483-00	MYLAR	0.01uF	5%	50V
C341	1-162-282-31	CERAMIC	100PF	10%	50V
C345	1-161-494-00	CERAMIC	0.022uF		25V
C376	1-162-294-31	CERAMIC	0.001uF	10%	50V
C377	1-124-902-00	ELECT	0.47uF	20%	50V
C378	1-124-126-00	ELECT	47uF	20%	10V
C379	1-126-101-11	ELECT	100uF	20%	16V
C380	1-124-360-00	ELECT	1000uF	20%	16V
C381	1-130-497-00	MYLAR	0.15uF	5%	50V

< FILTER >

CF1	1-567-166-00	FILTER, CERAMIC
CF2	1-567-166-00	FILTER, CERAMIC
CF3	1-527-870-00	FILTER, CERAMIC

< VARIABLE CAPACITOR >

CT1-4, VC1-4	1-141-454-11	CAP, VAR (AEP)
CT1-4, VC1-4	1-151-708-11	CAP, VAR (US)

MAIN

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D1	8-719-107-94	DIODE 1SS202-1	
D3	8-719-107-94	DIODE 1SS202-1	
D101	8-719-107-94	DIODE 1SS202-1	
D102	8-719-107-94	DIODE 1SS202-1	
D103	8-719-107-94	DIODE 1SS202-1	
D107	8-719-107-94	DIODE 1SS202-1	
D202	8-719-107-94	DIODE 1SS202-1	
D203	8-719-107-94	DIODE 1SS202-1	
D204	8-719-107-94	DIODE 1SS202-1	
D214	8-719-160-34	DIODE RD6.8F-B2	
D215	8-719-160-23	DIODE RD5.1F-B2	
		< IC >	
IC1	8-752-050-20	IC CXA1238S	
IC101	8-759-242-58	IC TA8189N	
IC102	8-759-933-38	IC BA3822LS	
IC103	8-759-205-82	IC TA7282AP	
		< JACK >	
JK1	1-507-806-00	JACK 1P (PHONES)	
JK2	1-580-045-11	JACK (SPEAKER L)	
JK3	1-580-045-11	JACK (SPEAKER R)	
JK4	1-563-330-11	JACK (MIC)	
		< COIL >	
* L1	1-426-321-11	COIL, RF FM	
L2	1-406-393-11	COIL, FM OSC	
L3	1-402-508-11	ANTENNA, FERRITE-ROD (AM) (US)	
L3	1-501-579-11	ANTENNA, FERRITE-ROD (AM) (AEP)	
L5	1-406-040-00	COIL (OSC)	
L101	1-412-457-11	INDUCTOR 2.7mH	
L301	1-412-457-11	INDUCTOR 2.7mH	
		< TERMINAL >	
* P1	1-535-115-00	TERMINAL	
		< CONNECTOR >	
* PN1	1-580-049-11	CONNECTOR 10P	
* PN2	1-580-047-11	CONNECTOR 3P	
* PN3	1-580-048-11	CONNECTOR 4P	
* PN4	1-580-046-11	CONNECTOR 2P	
* PN5	1-695-136-11	CONNECTOR 5P	
* PN501	1-580-046-11	CONNECTOR 2P	
* PN502	1-580-048-11	CONNECTOR 4P	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q1	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q2	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q100	8-729-904-34	TRANSISTOR DTA114TS	
Q107	8-729-904-39	TRANSISTOR DTC114TS	
Q122	8-729-904-39	TRANSISTOR DTC114TS	
Q203	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q204	8-729-206-21	TRANSISTOR RN1003	
Q208	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q209	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q210	8-729-173-38	TRANSISTOR 2SA733-K	
Q211	1-807-940-11	TRANSISTOR KTC9013	
Q213	8-729-900-61	TRANSISTOR DTA114ES	
Q214	8-729-173-38	TRANSISTOR 2SA733-K	
Q215	8-729-904-39	TRANSISTOR DTC114TS	
Q221	8-729-904-39	TRANSISTOR DTC114TS	
Q223	8-729-904-34	TRANSISTOR DTA114TS	
Q307	8-729-904-39	TRANSISTOR DTC114TS	
Q322	8-729-904-39	TRANSISTOR DTC114TS	
		< RESISTOR >	
R1	1-249-469-11	CARBON 100K 5% 1/4W	
R2	1-249-421-11	CARBON 2.2K 5% 1/4W	
R3	1-249-410-11	CARBON 270 5% 1/4W	
R4	1-249-405-11	CARBON 100 5% 1/4W	
R5	1-249-427-11	CARBON 6.8K 5% 1/4W	
R6	1-249-427-11	CARBON 6.8K 5% 1/4W	
R8	1-249-421-11	CARBON 2.2K 5% 1/4W	
R9	1-247-887-00	CARBON 220K 5% 1/4W	
R10	1-249-429-11	CARBON 10K 5% 1/4W	
R11	1-249-398-11	CARBON 27 5% 1/4W	
R12	1-249-411-11	CARBON 330 5% 1/4W	
R13	1-247-887-00	CARBON 220K 5% 1/4W	
R16	1-247-725-11	CARBON 10K 5% 1/4W	
R17	1-249-430-11	CARBON 12K 5% 1/4W	
R19	1-249-405-11	CARBON 100 5% 1/4W	
R30	1-249-425-11	CARBON 4.7K 5% 1/4W	
R31	1-249-425-11	CARBON 4.7K 5% 1/4W	
R32	1-249-425-11	CARBON 4.7K 5% 1/4W	
R35	1-249-419-11	CARBON 1.5K 5% 1/4W	
R37	1-247-726-11	CARBON 33K 5% 1/4W	
R38	1-247-726-11	CARBON 33K 5% 1/4W	
R45	1-249-435-11	CARBON 33K 5% 1/4W	
R46	1-249-435-11	CARBON 33K 5% 1/4W	
R50	1-247-700-11	CARBON 100 5% 1/4W	
R101	1-249-417-11	CARBON 1K 5% 1/4W	
R102	1-249-417-11	CARBON 1K 5% 1/4W	
R103	1-247-883-00	CARBON 150K 5% 1/4W	

MAIN

MAIN

Ref. No.	Part No.	Description				Remark
R104	1-249-406-11	CARBON	120	5%	1/4W	
R105	1-249-427-11	CARBON	6.8K	5%	1/4W	
R107	1-247-883-00	CARBON	150K	5%	1/4W	
R108	1-249-426-11	CARBON	5.6K	5%	1/4W	
R109	1-249-438-11	CARBON	56K	5%	1/4W	
R110	1-249-413-11	CARBON	470	5%	1/4W	
R113	1-249-417-11	CARBON	1K	5%	1/4W	
R114	1-249-430-11	CARBON	12K	5%	1/4W	
R115	1-249-438-11	CARBON	56K	5%	1/4W	
R116	1-249-430-11	CARBON	12K	5%	1/4W	
R117	1-249-417-11	CARBON	1K	5%	1/4W	
R119	1-249-434-11	CARBON	27K	5%	1/4W	
R120	1-249-414-11	CARBON	560	5%	1/4W	
R121	1-249-417-11	CARBON	1K	5%	1/4W	
R122	1-247-713-11	CARBON	1K	5%	1/4W	
R123	1-249-417-11	CARBON	1K	5%	1/4W	
R124	1-249-417-11	CARBON	1K	5%	1/4W	
R125	1-247-713-11	CARBON	1K	5%	1/4W	
R130	1-249-408-11	CARBON	180	5%	1/4W	
R170	1-249-424-11	CARBON	3.9K	5%	1/4W	
R173	1-249-408-11	CARBON	180	5%	1/4W	
R185	1-247-698-11	CARBON	68	5%	1/4W	
R201	1-247-891-00	CARBON	330K	5%	1/4W	
R202	1-249-416-11	CARBON	820	5%	1/4W	
R203	1-249-417-11	CARBON	1K	5%	1/4W	
R204	1-247-710-11	CARBON	560	5%	1/4W	
R205	1-249-440-11	CARBON	82K	5%	1/4W	
R206	1-247-903-00	CARBON	1M	5%	1/4W	
R207	1-249-411-11	CARBON	330	5%	1/4W	
R208	1-249-429-11	CARBON	10K	5%	1/4W	
R209	1-249-407-11	CARBON	150	5%	1/4W	
R214	1-249-435-11	CARBON	33K	5%	1/4W	
R215	1-249-425-11	CARBON	4.7K	5%	1/4W	
R216	1-247-700-11	CARBON	100	5%	1/4W	
R217	1-249-437-11	CARBON	47K	5%	1/4W	
R218	1-249-425-11	CARBON	4.7K	5%	1/4W	
R219	1-247-897-11	CARBON	560K	5%	1/4W	
R221	1-247-887-00	CARBON	220K	5%	1/4W	
R230	1-249-440-11	CARBON	82K	5%	1/4W	
R232	1-249-426-11	CARBON	5.6K	5%	1/4W	
R237	1-249-435-11	CARBON	33K	5%	1/4W	
R245	1-249-413-11	CARBON	470	5%	1/4W	
R249	1-247-891-00	CARBON	330K	5%	1/4W	
R251	1-249-410-11	CARBON	270	5%	1/4W	
R252	1-249-431-11	CARBON	15K	5%	1/4W	
R253	1-249-393-11	CARBON	10	5%	1/4W	
R254	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-469-11	CARBON	100K	5%	1/4W	
R256	1-249-405-11	CARBON	100	5%	1/4W	

Ref. No.	Part No.	Description				Remark
R257	1-249-423-11	CARBON	3.3K	5%	1/4W	
R258	1-249-400-11	CARBON	39	5%	1/4W	
R259	1-249-414-11	CARBON	560	5%	1/4W	
⚠R260	1-217-641-00	FUSIBLE	4.7	5%	1/4W	F
R261	1-249-429-11	CARBON	10K	5%	1/4W	
R262	1-249-437-11	CARBON	47K	5%	1/4W	
R263	1-249-425-11	CARBON	4.7K	5%	1/4W	
R270	1-249-405-11	CARBON	100	5%	1/4W	
R301	1-249-417-11	CARBON	1K	5%	1/4W	
R302	1-249-417-11	CARBON	1K	5%	1/4W	
R303	1-247-883-00	CARBON	150K	5%	1/4W	
R304	1-249-406-11	CARBON	120	5%	1/4W	
R305	1-249-427-11	CARBON	6.8K	5%	1/4W	
R307	1-247-883-00	CARBON	150K	5%	1/4W	
R308	1-249-426-11	CARBON	5.6K	5%	1/4W	
R309	1-249-438-11	CARBON	56K	5%	1/4W	
R310	1-249-413-11	CARBON	470	5%	1/4W	
R313	1-249-417-11	CARBON	1K	5%	1/4W	
R314	1-249-430-11	CARBON	12K	5%	1/4W	
R315	1-249-438-11	CARBON	56K	5%	1/4W	
R316	1-249-430-11	CARBON	12K	5%	1/4W	
R317	1-249-417-11	CARBON	1K	5%	1/4W	
R319	1-249-434-11	CARBON	27K	5%	1/4W	
R320	1-249-414-11	CARBON	560	5%	1/4W	
R321	1-249-417-11	CARBON	1K	5%	1/4W	
R322	1-249-417-11	CARBON	1K	5%	1/4W	
R323	1-249-417-11	CARBON	1K	5%	1/4W	
R324	1-249-417-11	CARBON	1K	5%	1/4W	
R325	1-247-713-11	CARBON	1K	5%	1/4W	
R330	1-249-408-11	CARBON	180	5%	1/4W	
R370	1-249-424-11	CARBON	3.9K	5%	1/4W	
R373	1-249-408-11	CARBON	180	5%	1/4W	
R385	1-247-698-11	CARBON	68	5%	1/4W	
R501	1-249-418-11	CARBON	1.2K	5%	1/4W	
R504	1-249-418-11	CARBON	1.2K	5%	1/4W	

< SWITCH >

SW1	1-692-226-11	SWITCH, LEVER SLIDE (BAND)
SW2	1-692-225-11	SWITCH, LEVER SLIDE (FUNCTION)
SW3	1-572-420-11	SWITCH, SLIDE (PB/REC)
SW4	1-692-170-11	SWITCH, SLIDE (ISS/FM MODE)

< TRANSFORMER >

T1	1-404-925-11	IFT, AM
T101	1-406-238-11	COIL, OSCILLATION

< VARIABLE RESISTOR >

VR1	1-228-995-00	RES, ADJ, METAL 22K (VCO)
VR101	1-241-989-11	RES, VAR, SLIDE 100K/100K (BASS BOOST)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN POWER VOLUME

Ref.No.	Part No.	Description			Remark
VR102	1-241-990-11	RES, VAR, SLIDE 100K/100K (300Hz)			
VR103	1-241-990-11	RES, VAR, SLIDE 100K/100K (1KHz)			
VR104	1-241-990-11	RES, VAR, SLIDE 100K/100K (3KHz)			
VR105	1-241-990-11	RES, VAR, SLIDE 100K/100K (10KHz)			
VR107	1-241-988-11	RES, VAR, SLIDE 100K/100K (BALANCE)			
VR201	1-228-989-00	RES, ADJ, METAL 470 (TAPE SPEED)			
**********					
*	1-644-291-11	POWER BOARD			
		**********			
⚠	1-533-243-11	HOLDER, FUSE (AEP)			
		< CAPACITOR >			
C901	1-161-494-00	CERAMIC	0.022uF		25V
C902	1-161-494-00	CERAMIC	0.022uF		25V
C903	1-161-494-00	CERAMIC	0.022uF		25V
C904	1-161-494-00	CERAMIC	0.022uF		25V
C906	1-124-887-00	ELECT	3300uF	20%	16V
		< DIODE >			
D901	8-719-200-02	DIODE	10E2		
D902	8-719-200-02	DIODE	10E2		
D903	8-719-200-02	DIODE	10E2		
D904	8-719-200-02	DIODE	10E2		
		< FUSE >			
⚠F902	1-532-259-00	FUSE, TIME-LAG (1.6A/250V) (AEP)			
		< JACK >			
⚠JK901	1-526-838-11	INLET, AC 2P (AC IN ~) (AEP)			
⚠JK901	1-540-009-11	INLET, AC 2P (AC IN ~) (US)			
		< CONNECTOR >			
* PN901	1-580-046-11	CONNECTOR 2P			
		< TRANSFORMER >			
⚠PT901	1-423-425-11	TRANSFORMER, POWER (AEP)			
⚠PT901	1-448-781-11	TRANSFORMER, POWER (US)			
**********					
	1-644-292-11	VOLUME BOARD			
		**********			
		< VARIABLE RESISTOR >			
VR106	1-241-987-11	VOLUME, CARBON 20K/20K (VOLUME)			
**********					

Ref.No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
4	1-575-951-11	CORD, SPEAKER	
ANT1	1-501-544-11	ANTENNA, TELESCOPIC	
HE901	1-543-777-11	HEAD, MAGNETIC (ERASING)	
HP901	X-3365-802-1	ASSY HEAD	
HRP901	1-543-424-21	HEAD (RECORD/PLAYBACK)	
M901	3-382-604-01	MOTOR ASSY	
S101	1-571-556-11	SWITCH, LEAF (DECK-A FF/REW)	
S102	1-572-538-11	SWITCH, LEAF (DECK-B FF/REW)	
S103	1-692-361-11	SWITCH, LEAF (DECK-A PB)	
S104	1-692-361-11	SWITCH, LEAF (DECK-B PB/REC)	
S105	1-692-361-11	SWITCH, LEAF (DIRECTION)	
SP101	1-544-764-11	SPEAKER (10CM)	
SP102	1-529-047-11	BUZZER	
SP201	1-544-764-11	SPEAKER (10CM)	
SP202	1-529-047-11	BUZZER	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
⚠	1-575-131-11	CORD, POWER (AEP)	
⚠	1-690-952-11	CORD, POWER (US)	
*	3-324-066-01	SHEET, PROTECTION	
*	3-380-021-01	INDIVIDUAL CARTON (US)	
*	3-380-022-01	INDIVIDUAL CARTON (AEP)	
*	3-381-483-01	CUSHION	
	3-755-156-21	MANUAL, INSTRUCTION (US) (ENGLISH)	
	3-755-156-41	MANUAL, INSTRUCTION (AEP) (ENGLISH, SPANISH, PORTUGUESE)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW, TAPPING	
#2	7-685-651-79	SCREW +BVTP 3X20 TYPE2 N-S	
#3	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S	
#4	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#5	7-685-152-19	SCREW +P 3X25 TYPE2 NON-SLIT	
#6	7-682-549-04	SCREW +B 3X10	
#7	7-621-255-45	SCREW +PTT 2X6 (S)	
#8	7-621-773-95	SCREW +B 2.6X6	
#9	7-682-547-04	SCREW +BVTT 3X6 (S)	
#10	7-685-649-79	SCREW +BVTP 3X14 TYPE2 N-S	
#11	7-621-770-67	SCREW, TOTSU PTTWH 2.6X6	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
#12	7-624-190-11	STOP RING 3, TYPE-CS	
#13	7-621-255-25	SCREW +PTT 2X4 (S)	
#14	7-621-770-87	SCREW +PTT 2.6X5 (S)	
#15	7-628-253-90	SCREW +PS 2.6X4	
#16	7-624-106-04	STOP RING 3.0, TYPE -E	
#17	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
#18	7-685-133-19	SCREW +P 2.6X6 TYPE2	

Printing Method for Large Sized Documents Such As Circuit Diagrams

Printing the page that exceeds A4-size two pages (or letter size) is possible by specifying the print range. (Acrobat Reader Version 4.0 or later)

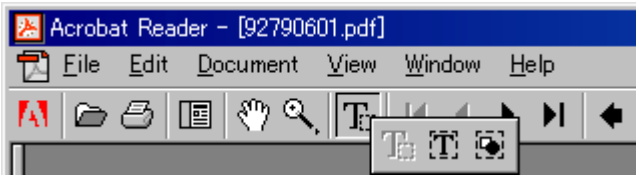
1. The enlarged print is made, if a smaller range than A4 size is specified and the A4 size is selected as a print paper.
2. Almost real sized print is made, if the range is specified, meeting the print paper size.
3. The reduced print is made, if a larger range than the print paper size is specified.

PRINTING BY SPECIFYING A RANGE

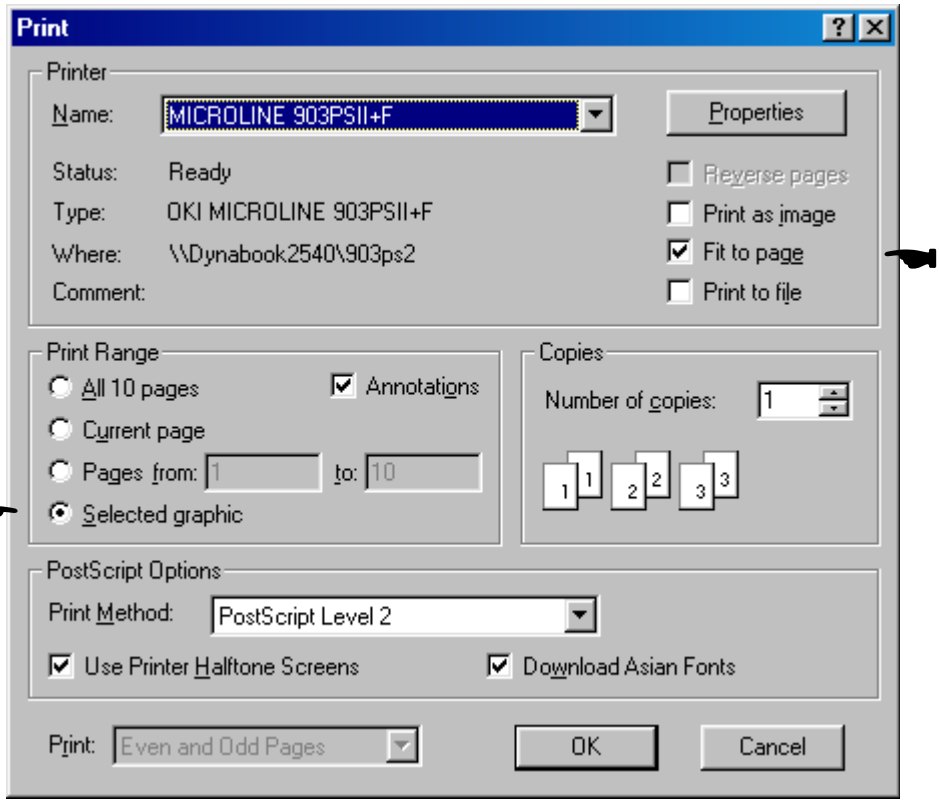
In printing out the drawings such as a schematic diagram and a printed wiring board larger than the printed paper size, they can be printed by specifying the range. (Acrobat Reader Version 4.0 or later)

1. Display the page to be printed.
2. From the File menu, select [Page Setup] and set the paper size.
3. From the Command bar, select [Graphic Select Tool].

   (Keep pressing , select)



4. Dragging the cursor, enclose the range on the page to be printed.
5. From the File menu, select [Print] and make sure that the [Selected Graphic] is already checked. Also, if [Fit to page] is checked, the selected range is enlarged or reduced (and rotated as necessary) meeting the paper size.



6. To cancel the printed range, click an arbitrary position on the screen.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	1992.11	New
1.1	2002.09	PDF registration (including CORRECTION-1) . (SPM-02040)